

SOFTWARE FROM BETASOFT

GAMES MASTER FOR THE SAM COUPE:

At last YOU can create stunning games and demos for the Coupe, with fast, smooth, animated sprites, complex sound effects, missiles, platforms, lifts, detailed backgrounds etc. No programming expertise required! Most of a game's design is specified by the menu-driven editor, which lets you edit graphics, animation, movement, sprite collision actions, sound effects, masking, control keys etc. A simple but very fast compiled language controls some features. A complex demo with animated bouncing sprites passing over and under each other, in front of a background, can be written with just a few commands to start the sprites off. (Once started, the sprites can act by themselves.) The editor produces stand-alone ROM-independent CODE programs that are free from any copyright restrictions - so you can sell your masterpiece! Impressive demonstration programs and an extensive sprite library are included to get you started. Backgrounds and sprites can also be grabbed from any Mode 4 screen and edited.

SIX SPRITE PLANES PLUS BACKGROUND

BIG SPRITES - UP TO A THIRD OF THE SCREEN AREA

TRUE COLLISION DETECTION ON SPRITE EDGE

SMOOTH, FAST PIXEL MOVEMENT OVER 100 ON-SCREEN SPRITES

POWERFUL EASY TO USE EDITOR COMPILED CONTROL LANGUAGE

COMPLEX MOVEMENT PATTERNS AND ANIMATION SEQUENCES

STEREO SPRITE-FOLLOWING SOUND EFFECTS

Written by Dr Andy Wright, author of the Sam ROM, MASTERDOS and MASTERBASIC, the program works with 256K or 512K RAM and ROM 2.0 and above. A comprehensive manual is included.

GAMES MASTER COSTS JUST £24.99 INCLUSIVE OF POSTAGE AND PACKING (ADD £1 IF OUTSIDE EUROPE). SPECIAL PRICE TO INDUG MEMBERS: £22.50 (QUOTE MEMBERSHIP NUMBER)

NEW !! Secrets of the SAM ROM revealed! The complete ROM 3 source listing on disk, extensively commented by the programmer, Andy Wright. Addresses and memory contents are included to make comparison with the actual ROM easy. The viewing program lets you move lightning-fast through the listing with various step sizes, perform searches, or list any part to a printer or (with MasterDOS) a disk file. A must for the serious SAM user! Just £9.95.

FILE MANAGER - The flexible file program. Files up to 780K. Requires MasterDOS and MasterBasic v1.7 or later (updates are free if you return your original disk. Enclose an SAE if you're not buying anything.) £12.99

MasterDOS - The DOS for the serious user. Faster, easier to use and more reliable than SAMDOS. Now available EXCLUSIVELY from BETASOFT. Offers RAMdisk and clock/calendar support, subdirectories, BACKUP, serial and random access files, multi-sector READ and WRITE AT, and much more! £15.99.

MasterBASIC - The much-praised SAM Basic extension adds many new commands for graphics, sound, printing, data-handling, improving DOS, searching and editing programs, etc. £15.99.

STILL AVAILABLE: Beta DOS for the PLUS D. More files per disk, much faster, random-access files, file compression, BACKUP and many other features. Fully compatible with existing disks and files. Only £9.95. **BETA BASIC** for the Spectrum (48K/128K+/+2) adds over 100 new commands and functions to Spectrum Basic. Versions available for Disciple+/D, Discovery, or Tape/Microdrive. A classic for just £15.95!

Prices include P & P. Make cheques and postal orders payable to:
BETASOFT, 24 WYCHE AVENUE, KINGS HEATH, BIRMINGHAM, B14 6LQ

Vol. 6 - N° 6.

February 1993.

FORMAT

FOR SPECTRUM AND SAM USERS
(Incorporating Sinclair & Sam Computing)



Gentlemen
Prefer **FORMAT**

£1.25 [UK R.R.P.]

ISSN 0963-8598

B.G.SERVICES

64, Roebuck Road, Chessington, Surrey, KT9 1JX. Tel: 081-397-0763.

SPECTRUM PRODUCTS

- +2A MOD KIT** Converts a +2A into a standard +2. This allows the PLUS D; DISCiPLE and INTERFACE 1 to operate properly. Gives you two expansion ports. Includes replacement ROM, two port FIXER2, full fitting instructions and manual updates. **£18.50.**
- THE FIXIT** Converts the +3 and +2A expansion port so that some 48K add-ons will work. **£9.50.**
- VTX5000** **SPECIAL OFFER** - V23 direct connect modem with viewdata software in ROM, Version for 48K or gray +2 - **£11.** +2A/+3 version (includes FIXIT) - **£20.50** - Both include PD tape.
- PD TAPE 01** Spectrum Communications software for VTX5000 and RS232s. **ONLY £1.**
- USER>USER** Two VTX5000s (48K) with tape containing software to allow direct transfer of software between users via the phone. (Tape is easily cloned for other user). **£30.**
- MEMBRANES** Spectrum keyboard membranes, please phone for availability/price.
- +3 CP/M** Including **Mallard Basic**. Written by Locomotive Software. Includes 3 inch disc with software, utilities and a very detailed manual. **£29.**
- +3 PD DISC** CP/M and +3 software. Includes 706K formatter for B: drive and 203K formatter for A: drive. **£2.**

SAM PRODUCTS

- PRO-DOS** Allows you to run CP/M 2.2 programs on SAM. Comes on two discs with a comprehensive 68 page manual. **SPECIAL OFFER £27.**
- PRO-DOS PD1** A collection of PD programs including a word-processor, spreadsheet etc. Over 700K of software (includes tutorial) **£2** (Only **£1** if ordered at the same time as PRO-DOS)
- THE P.A.W.** The Professional Adventure Writing system from Gilsoft. Runs under PRO-DOS. Includes two manuals and all files for writing text adventures. **SPECIAL OFFER £17.50**
- SAMPLIFIER** Stereo Amp powered from SAM. Drives speakers or head-phones. Plugs into light-pen socket. Amplifier alone **£20.** With speakers **£25.** With head-phones **£23.**

□ NOW AVAILABLE - STAR PRINTERS - PHONE FOR PRICES □

Please allow 28 days for delivery. All prices include UK postage and packing. Overseas customers please add £2 on modems; PRO-DOS and +3 CP/M, add £1 on all other items. Please make cheques/postal orders payable to B.G.Services.

CONTENTS

Vol.6 No 6.

February 1993.

News On 4.....	4
The Editor Speaks.....	7
Short Spot.....	9
Problem Solving Part 1.....	15
Include Strings.....	19
Machine Code Without Tears.....	21
The Help Page.....	27
FILE MANAGER Reviewed.....	31
Your Letters.....	33
FORMAT Readers Service.....	39

THIS MONTHS ADVERTISERS:-

ALL FORMAT SHOWS	5
BETASOFT	Back Cover
B.G.SERVICES	2
BLUE ALPHA ELECTRONICS	34
FORMAT SPECIAL OFFER	17
FRED PUBLISHING	26
GLENCO SOFTWARE	12
LEO SOFTWARE	17
REVELATION SOFTWARE	8
S.D.SOFTWARE	6
STEVE'S SOFTWARE	22
WEST COAST COMPUTERS	18

FORMAT ISSN 0963-8598.

(C)Copyright 1992 FORMAT PUBLICATIONS. All Rights Reserved.

No part of this publication may be reproduced, in any form, without the written consent of the publisher. FORMAT readers may copy program material only for their own personal use. While every effort is made to ensure accuracy in FORMAT the publisher will not be held liable for any errors or omissions.

FORMAT is published by **FORMAT PUBLICATIONS.**
34, Bourton Road, Gloucester, GL4 0LE, England.
Telephone 0452-412572. Fax 0452-380890.

Printed by D.S.LITHO. Gloucester. Telephone 0452-523190.

NEWS ON 4

FRED TAKES OVER SAM OUTLET

Fred Publishing have taken over the SAM Coupé version of OUTLET and will be merging it with their existing highly successful disc magazine FRED from its next issue.

Colin McDonald, head of Fred Publishing, told FORMAT "The move will help us to consolidate our position as the leading disc based magazine for the SAM Coupé. It will also provide us with a large back-catalogue of OUTLET issues which we will be able to make available to a wider audience."

Colin went on to say that he hopes to mail the latest issue of FRED to all existing SAM OUTLET subscribers as quickly as possible. All outstanding OUTLET issues will be converted to FRED issues, those who already have subscriptions with FRED will have them extended by the appropriate number of months.

IBM - MASSIVE LOSSES

IBM have reported losses that make some countries national debts look like chicken-feed.

The company reported losses of £3,000,000,000 for the year 1991-92, the equivalent of 60 for every man, woman and child in the UK. This is by far the biggest loss ever reported by a company.

It has already axed 45,000 of its staff world-wide in the last year and plans to shed another 25,000 by late 1993. Much of the loss is blamed on this redundancy program which, together with other reorganization, has so far cost £7,700 million over the last two years. Around 1500 UK staff have already lost their jobs and the estimate is that another 1000 will go this year though that will still leave over 12,000 employees.

IBM's American boss John Akers warned Wall Street dealers that 1993 may not be much better and that only an end to the world recession would really put IBM back on its feet.

SINCLAIR IN TROUBLE

Nintendo and Sega both ran into double trouble this month.

First, Douglas French - MP for Gloucester - called for a probe into the high prices of games for consols, some of which sell for as much as £60 in the UK.

The MP said "The technology used for these games is very simple but in my opinion the prices remain very high." He went on to say "Many parents simply cannot afford to buy them."

The Office of Fair Trading confirmed that they were looking into the matter and are drawing up plans for a formal investigation later this year. This may involve a referral to the Monopolies Commission on the grounds that both companies are using restrictive practices to tie potential games producers into buying cartridge produced only by the respective consol manufacturer.

In a second blow the consol giants were hit with wide-spread hysteria in the tabloid press saying that playing these games causes epilepsy.

While Nintendo eventually admitted that one or two cases of epileptic attacks had been reported, it was quick to point out that any flickering light source could have triggered an attack provided the person was already predisposed that way. Epilepsy it was pointed out is not a problem that is caused by any outside influence.

Experts do agree that one form, photo-sensitive epilepsy (which affects only 3% of all epileptic cases) could be aggravated by hard concentration on a games screen. Having said that, only a very small minority would be affected and then only by prolonged viewing.

Several trade magazines were also quick to publish guide-lines for retailers designed to calm public concerns. It was generally recommended that kids should sit at least three feet from the screen in a normally lit room and should not play for more than

45 minutes without break.

Some how 1993 just doesn't seem to be the best of years so far for the consol manufacturers....

RAUMORS RUMOUR

Rumors are strong at the moment that one of the two remaining Sinclair Glossies (SU or YS) could be looking for a buyer.

Sales of both magazines are now down to between 40 and 50 thousand, half what they were a few years ago. Couple this with falling advertising revenue and the downward spiral grows ever faster - less advertising-smaller issue-lower sales-less advertising.....

Since the failure of CRASH the writing has been on the wall for one of the remaining two - the Spectrum games market is not big enough anymore to support two glossy mags. Which one will go? Only time will tell now.

GAMESMASTER RECORD.

Gamesmaster set new records by pulling in over 3.1 million viewers for Channel 4 on Christmas Eve. This made it the most watched program of the day on that channel.

NEUMONIA RISK

Another cheap 24 pin printer is on its way, this time from Seikosha. Their SL95 is a colour printer and will retail for £249 but will almost certainly be advertised from discount mail-order companies even cheaper.

The printer boasts features like a 43K buffer, speeds from 64 to 240 characters per second depending on mode, paper parking and several built in fonts. A sheet feeder will also be available at £82.

AMIGA PRICE HIKE.

Commodore UK have raised the price of all Amiga leisure packs by £30 with effect from the 1st January 1993.

However confusion is widespread at the moment because, nearly a month later, most of the big multiples are still selling at the old price. Small

retailers are complaining that they stand no chance of making sales with such a large difference in price. They point out that if they were to sell at the same price as stores like Comets and Dixons there would be no profit in it at all.

Commodore UK have promised to maintain dealer margins but the large multiples seem to play by their own rules.

News Credits: Barry Wright.

URGENT we need your news. Anything you think other people should know about. Items printed earn contributor 3 month extra subscription (please claim when renewing).

Remember, we can't read every magazine and newspaper in the world - if you see something published anywhere that relates to the Spectrum or SAM then cut it out and send it to us (mark the title of the magazine, issue number etc so we can obtain permission to use the item).

OFF ADMISSION
 £4 (Adults) £3 with this voucher
 £2 (children) voucher not valid
 Only one voucher per person No Cash Value

PHOTOCOPIES AND REPRINTS OF THIS VOUCHER ARE VALID

1993		
Feb	6 London	Novotel, Hammersmith
	7 Wales	Univ. Union, Park Place, Cardiff
	13 London	Sandown Park, Esher, Surrey J9/10 M25
	20 North West	Haydock Park Racecourse J23 M6
	21 Scotland	City Hall, Candleriggs, Glasgow
	27 Hemel Hempstead	Dacorum Pavilion, The Marlowes
	28 West	Brunel Centre, Templemeads, Bristol
March	6 Leicester	De Montfort Hall, Granville Road
	7 North	Univ. Sports Centre, Calverley St., Leeds
	13 North East	Seaburn Centre, Sea Road, Sunderland
	20 London	Sandown Park, Esher, Surrey J9/10 M25
	21 West Midlands	National Motorcycle Museum J6 M42
	27 North West	Haydock Park Racecourse J23 M6
April	3 Scotland	Adam House, Chambers St., Edinburgh
	4 Scotland	City Hall, Candleriggs, Glasgow
	11 Brighton	Corn Exchange, Church St.
	17 Nottingham	Jesse Boat Centre, University
	18 West Midlands	National Motorcycle Museum J6 M42
	24 London	Sandown Park, Esher, Surrey J9/10 M25
	25 West	Brunel Centre, Templemeads, Bristol
May	1 North East	Northumbria Centre, Washington, Dist. 12
	2 Leeds	Univ. Sports Centre, Calverley St., Leeds
	22 London	Sandown Park, Esher, Surrey J9/10 M25
	23 Hemel Hempstead	Dacorum Pavilion, The Marlowes
	29 Leicester	De Montfort Hall, Granville Road
	30 West Midlands	National Motorcycle Museum J6 M42
June	19 London	Novotel, Hammersmith
	20 West	Brunel Centre, Temple Meads, Bristol
	26 North West	Haydock Park Racecourse J23 M6
	27 West Midlands	National Motorcycle Museum J6 M42
	27 West Midlands	National Motorcycle Museum J6 M42
July	25 West Midlands	National Motorcycle Museum J6 M42

STANDS ARE AVAILABLE FROM ONLY £60 Ring 01608 663820

ALL FORMATS COMPUTER FAIR
 June Progression, Double Events

S.D. Software



SP-FILE+ UNIDOS PC-SUITE

UNIDOS Version 2 of the incredible new DOS from Steve Warr for the PLUS D and DISCIPLE. Same DOS file for both systems. Random files. Sub directories. Hundreds of files on one disk. Hidden files. Protected files. Copy files of any length. Incredibly versatile screen dump routines. Error trapping. Many more features. Compatible with all Spectrums*. Over 20 programs now included on the disk. * +2A/+3 restricted to 48K mode.

SPECFILE+ Now a Spectrum data filing program that never gets out of date. Specfile+ holds a massive 28K of data and by using data compression makes it seem like much more. Very fast CASE selective and complex searches. Designed to be added to so it grows as you do. This program is a must have for any one with data to hold.

SPECMAKER The simplest Spectrum emulator for your SAM. 1000s of 48K programs work without the need for any conversion. Most other programs need only minor changes. All the extra SAM keys work in Spectrum mode. Uses SAM's parallel printer port and up to 380K of SAM memory as a RAMDISK. PLUS D and all OPUS disks can be loaded into SPECMAKER and saved to SAM disk. Can now convert files between Messenger & SPECMAKER format and so save on valuable disk space. Supplied on 3.5" disk *Master Dos & Master basic required for single density OPUS

PC-Suite. From the author of SPECMAKER S.D. Software brings you PC-SUITE. Now you can transfer your IBM data files by reading and writing IBM disks on your Sam. PC-Suite will let you format IBM disks on Sam. Write Sam basic programs on your PCAT. Use PC-Suite to copy Sam data files to PC disk and print them on a high quality laser printer. Many more uses. nb. Not a PC emulator.

INDUG PRICES		NON MEMBERS
Specfile+	£ 9.95	£12.95
UNIDOS	£19.95	£25.95
Createfile Manual	£ 5.50	£ 6.50
Specmaker	£ 9.95	£12.95
Specmaker Upgrade	£ 6.50	£ 8.00
PC Suite	£19.95	£25.95
IBU* /SAMIBU	£ 3.50	£ 4.90
DBU*	£ 4.00	£ 5.50
File Converter*	£ 4.50	£ 5.30
Hackers Workbench*	£ 6.50	£ 9.90

* GDOS programs still available *

PLEASE Add £0.50 Postage
(£1.20 OUTSIDE UK)

DO NOT FORGET YOUR INDUG
MEMBERSHIP NUMBER

Don't forget to say if ordering for PLUS D or DISCIPLE and the size of disk required. (PLUS D, 3.5 inch BOT will be sent otherwise)

S.D. Software, 70 Rainhill Road, Barnoldswick, Lancashire, England, BB8 6AB.



Sorry the January issue was a little late going out. Time was against us due to Christmas and problems with the West Coast mail-shot (which we decided to wait for, so FORMAT readers could be the first to read it). Still, from your letters it looks like the issue was worth waiting for.

A few bits of confusion have arisen though from the West Coast leaflets. First, West Coast are sharing a unit in South Wales with Blue Alpha Electronics in that they are using the warehouse for storage and dispatch. Blue Alpha are handling production and will, at least for the next two months, be able to handle queries on orders. However we at FORMAT Publications are handling all technical queries and customer care. Both Trevor and Spencer (the guiding lights behind West Coast) have other commitments over the next few months. Whether the final offices will be set up in South Wales, Gloucestershire or London depends on progress made during the first half of 1993.

The long term plans for SAM look good. It may well undergo a name change in the Spring/Summer and a new advertising campaign will be launched in August/September.

Several phone calls to us have asked "what has happened to Alan and Bruce"? Well Alan is in the Middle East at the moment, I believe he is putting together some training courses for Arabs (He speaks de lingo). Meanwhile Bruce is working on non-computer projects from his home in Swansea. There is no truth in the rumor that Bruce is working on a new ASIC for SAM, it doesn't really need one and the cost would be far too high anyway.

Lots seem to be happening in the SAM world at the moment but we could do with a lot more Spectrum items - what's happened to all you Spectrum owners out there? Gone to sleep on me? Come on, let's hear more from you, having celebrated its 10th birthday last year we still want it to be around to celebrate its 20th don't we....

Programming is the most important part of computing - it ain't much good having a lump of plastic and silicon on your desk unless you have programs to run on it. But one of the key parts of programming is how to approach solving a problem. Many find that a very big stumbling block. So that is why I am delighted to see a new series starting this month which is designed to help overcome your problems. When the first two parts arrived I was amazed that I had never thought of running something similar before.

And one last bit for this month. We have been able to persuade the organizers of The All Format Shows to be exceptionally generous. UK members will find an advanced ticket enclosed that is worth £4. While they are valid for any show until the end of July, we can't go to all of them ourselves. If you have never been to an All Formats Show I can highly recommend the Birmingham ones (by far the best venue). I should be at all the Birmingham shows except the one on the 14th February and, as I've said before, we will get to as many of the other locations as we can. Please phone a few days before a show to check if you don't want a wasted journey.

Bob Branchley, Editor.

The Secretary

The NEW word-processor for the SAM Coupé

AVAILABLE NOW

Yes, at long last, a word-processor that does justice to the SAM range of computers. *The Secretary* is advanced, yet very easy to use. Originally planned for release by SAMCO as one of their flag-ship products it now has even more features and is even more user-friendly. See for yourself the power and versatility of *The Secretary* and you will soon wonder how you managed without it. Available now at £14-95.

SPECIAL INDUG PRICE ONLY £12-95

Also available:-

	R.R.P.	INDUG PRICE
➤ ASTROBALL	£9-95	£8-95
➤ MANIC MINER	£9-95	£8-95
➤ BATZ 'N BALLS	£9-95	£8-95
➤ SPLAT!	£9-95	£8-95
➤ SOUND MACHINE	£14-95	£12-95
➤ COMET Z80 ASSEMBLER	£29-95	£24-95

NEW RELEASE - OUT 8th January 1993.

WOP GAMMA A Super-Fast 'Boulder Dash' Clone - FULL SCREEN SCROLLING - 60 Levels - R.R.P. £9-95 INDUG MEMBERS PRICE £8-95

Orders taken NOW for prompt dispatch on launch day.

- ♦All prices include UK postage and packing. Overseas add £1 surface, £2 airmail.
- ♦Payment by UK cheque, Eurocheque or PO, Payable to Revelation Software.
- ♦Please quote INDUG number on order if claiming discount.

♦Send orders to:-

Revelation Software,
PO Box 114,
Exeter,
Devon,
EX4 1YY.

**Revelation
Software**

REV-LA

SHORT SPOT

Edited By:- John Wase.

You'll never believe this. but cockups have reigned supreme and prevented your reading these words at the due time. It's all tied up with poor Bob's Jury Service. I had to do three (yes, three) Short Spots last November, because of this problem. Two were to go just before Bob's penury, the third immediately after, sandwiched between Jury Service and Christmas (don't forget; printers have to have hols, too). I guess there were about two days between Bob's return to the real world and Print Day. And in the chaos, my copy disappeared - totally. It never turned up, either! I've recovered it, so here it is, with appropriately late seasonal comments, originally penned in November! Hope this won't spoil your enjoyment, and hope you'll bear with us!

So, who's had a good Christmas stocking then? Unfortunately, it's still quite early in November as I am writing this, so I can't tell you what was in mine, though I can say that I'm hoping for a laser printer. Make the poor stocking bulge a bit, though, wouldn't it. Maybe an idle hope... Perhaps you're more realistic.

First on the list once again is Alan Cox, of St Clears, Dyfed, the depth of whose tape I have now plumbed (like I've reached the end). Couple of little bits for typing in over the cold turkey (marvellous invention these freezers - prolong the agony no end, don't they).

Here's a short program for the Spectrum, called "varprint". And it does just that, too! It produces a list of the variables used in a program. This can be very useful in a large program where you tend to lose track (Now, have I used *n* before? Mouse, maybe; or margin; or month? Maybe I haven't, cos I want it now for

minutes. Let's check). Note, in case you are baffled at the output (as Alan was at first), that loop variables appear as, for example, "FOR n". Some of the lines in the program are merely there to give the full range of variables as a demo. So this is a nice little useful utility. Here it is...

```
10 REM Program to print the name of
all variables used in a program
20 REM by R Thomas
30 REM Popular Computing Weekly
40 REM 4-10 December 1986
50 REM Merge program into your BASIC
60 REM then GOTO 9705
100 DIM y$(10)
110 LET w$="w"
120 DIM q(7)
9705 LET VARS=PEEK 23627+256*PEEK 2362
8: FOR I=VARS TO 65535: LET BYTE=
PEEK I: IF BYTE=128 THEN PRINT "E
ND OF VARIABLES.": STOP
9706 IF BYTE<=90 THEN PRINT CHR$(BYTE
-64+96);"S": LET I=I+(PEEK (I+1)+
256*PEEK (I+2)+2): NEXT I
9707 IF BYTE<=122 THEN PRINT CHR$(BYT
E): LET I=I+5: NEXT I
9708 IF BYTE<=154 THEN PRINT CHR$(BYT
E-128+96);"{}": LET I=I+(PEEK (I+
1)+256*PEEK (I+2)+2): NEXT I
9709 IF BYTE<=186 THEN PRINT CHR$(BYT
E-160+96);": GOSUB 9712: LET I=I+5
: NEXT I
9710 IF BYTE<=218 THEN PRINT CHR$(BYT
E-192+96);"${}": LET I=I+(PEEK (I
+1)+256*PEEK (I+2)+2): NEXT I
9711 PRINT "FOR ";CHR$(BYTE-224+96):
LET I=I+18: NEXT I
9712 FOR J=I+1 TO I+100: LET SBYTE=PEE
K J: IF SBYTE>=129 THEN LET SBYTE
=SBYTE-128: PRINT CHR$(SBYTE): RET
URN
9713 PRINT CHR$(SBYTE);: NEXT J
```

And here's another one, which also uses a bit of code, and which works quite nicely. This is an improved circle routine, again for the Spectrum. As you know, the Speccy has

hiccup every time the parameters lead to circles going off-screen. This routine doesn't worry about this - and you get the same reflection effect as you do on a SAM for big circles. All right so far? Type it in, then. No? All far too boring? O.K. - still type it in, 'cos here's the interesting bit. If you press "p" or "o" while the program is running, the centres of the circle being drawn are offset, and some quite interesting patterns are made. Dammit, they charge almost ten quid for the the "Spirograph", and you're almost there! A simple idea, once you've seen it, but new to Alan (and to me).

```

1 REM CIRCLE PROGRAM
2 REM by P I BERRY
3 REM Popular Computing Weekly
4 REM 27-28 March 1986
5 REM Lines 10 to 40 and the data a
  t lines 100 to 160 POKE the code,
  lines 50 to 90 are a demo
7 REM To see the full effects for c
  ircles bigger than the screen, al
  ter the limit for r in line 60 to
  ,say, 200.
9 LET tot=0
10 FOR f=23296 TO 23296+72
20 READ a: LET tot=tot+a
30 POKE f,a
40 NEXT f
45 IF tot<>8905 THEN PRINT "Error in
  data: check then re-run": STOP
50 DEF FN c(x,y,r)=USR 23296
55 LET x=127
60 FOR r=1 TO 87 STEP 1.2
70 LET x=x+(INKEY$="p")-(INKEY$="o")
80 LET L=FN c(x,87,INT r)
90 NEXT r
100 DATA 221,42,11,92,221,110,4,221
110 DATA 102,12,221,70,20,14,0,60,203
  ,58,213,205,38
120 DATA 91,209,12,122,145,87,48,4,12
  2,128,87,5,120
130 DATA 185,48,237,201,205,41,91,120
  ,65,79,205
140 DATA 47,91,120,237,68,71,125,129,
  212,59,91
150 DATA 125,145,216,197,79,229,124,1
  28,71,254,176
160 DATA 220,223,34,225,193,201

```

I found that this wouldn't work in 128k mode on my +2, but was fine as a 48k program. So be warned. Many thanks

for those two items, Alan.

And now, of course, this month's silly problem. Send me a real "Spirograph" program - one that'll do everything that the real, plastic-cogged job will do. And it must be really short to fit in "Short Spot". Tall order? I'll watch the post box.

Do you remember Alan Cox's problem: losing his character set when diverting CHARS on SAM (November's FORMAT)? You do? Well, I've two solutions to his problem. Dave Marriott of Long Eaton, Nottingham, mentions that the font you wish to use must lie within Page 0 of RAM (16384 to 32767). Although CHARS, like any two-byte number, can carry a value of up to 65535, SAM probably ignores the two most significant bits and uses the rest as an offset within Page 0. Dave finds that the best place to put alternative fonts is in the system heap at 16384, with any machine code to manipulate them in there as well. Dave also writes that another restriction on alternative fonts is that when you divert CHARS, it is only effective for characters 32 to 127 (space to copyright symbol) of your new font: for the UDGs from 128 upwards, SAM still uses the normal character set. Many thanks, Dave.

In an alternative approach, Carol Brooksbank (yes, it's Carol, bless her) writes that she's been looking at Alan Cox's difficulties with his underlining program on SAM. Carol reckons that while you can indeed use CHARS on SAM, it just isn't worth the aggro. The problem is that the character sets involved must be at low addresses in memory, because when SAM Basic is in operation, ROM1 is constantly being paged in and out, so if your character set is on the page ROM1 wants, it disappears into SAM's limbo, just when you need it. It's then paged out to make way for ROM1. Fortunately SAM's char-set is in RAM, not ROM, so changing sets couldn't be easier. Leave CHARS alone and poke any new set (either as a block of code or as a string 768 bytes long) to address 20880.

This little bit of Basic will do the trick. It copies SAM's normal character set to two strings, a\$ and b\$. Then every eighth character in a\$ is set to 255. Now, any time you POKE 20880,a\$, the underlined characters are in use. POKE 20880,b\$ and the normal characters reappear. Here's the program...

```

10 LET a$=MEMS(20880 TO 21647)
20 LET b$=MEMS(20880 TO 21647)
40 FOR x=8 TO 768 STEP 8
50 LET a$(x)=CHR$ 255
60 NEXT x

```

It won't look as good as on the Spectrum, because SAM's characters go right to the top of the 8x8 matrix, whereas the Spectrum's have a blank line top and bottom. In SAM's normal state of CSIZE 8,9 a blank line is inserted between the rows of characters. If you use CSIZE 8,8 to get the same number of lines on screen as there are on a Spectrum, everything looks very squashed. This underlining program fills up the only blank line in each character, so the underlining touches the bottom of the characters, and if you use CSIZE 8,8 there is no separation between lines of characters at all. Bless you again, Carol.

Now Back to the Spectrum. An old, old problem, at last sorted out. Miles Kinloch of Edinburgh has dropped me a line. He's also very kindly put the text of his letter on a disc. Just a note here. I ask for programs very particularly on disc, as these have to be sent to Bob, and transcription errors occur all too easily if I have to type short programs in. Long ones take just too long to type in, and therefore tend to get overlooked in favour of the latest batch of post. However I now use a DOS portable for writing the text of Short Spot. So there's no need to send text unless it's on 3.5" DOS disc. Nevertheless, thanks, Miles, for the gesture. Much appreciated.

Oh, the problem? I'd nearly got carried away, and forgot it. Miles has a grey Spectrum +2. You remember the problems - on quite a lot of these,

the 48k keyboard does not respond to quite a lot of letters - capitals M and N for instance. And STOP (Symbol shift/capital O). Makes it a bit difficult to call up Tasword's main menu, doesn't it. The original cure was to connect a 1000pf capacitor across diode 35. Miles mentions that this does not appear to work with every program, and thinks he knows why. "The value of the "I" register plays a great part in the 'sticky keys' phenomenon", writes Miles. "When "I" holds zero, the problem disappears completely - hence the reason why you do not see it happening in the 128k Editor. In 48k, "I" holds 63, which causes certain problems with certain keys, but with some values (I find 252 particularly troublesome) nearly half the keyboard sticks when you try caps shifted keys!

There are two ways to fix this problem - a hardware method or a software method. The trouble with the capacitor method above is that it doesn't cure the problem under all values of "I", but I have experimented a bit and discovered that diode 35 is in fact one of a series of 8 which connect to the keyboard. I tried bridging different combinations of these diodes with different values of capacitor, and have found that connecting 100 pf values across diodes 33 and 35 seems to effect a complete cure, regardless of the "I" register. I cannot guarantee that this will produce such excellent results on all +2s, but at least it did on mine.

The software method, for those who may feel unable to tackle the above modification, is to make sure "I" holds zero before calling the ROM keyscan (RST 56). With programs that don't use interrupts, the following Basic line will take care of this:-

```

10 RANDOMIZE USR (PEEK 23637+256* PE
EK 23538-5): REM CODE GOSUB G <>

```

This is machine code in a REM statement, where CODE and GOSUB are the Sinclair tokens (so you must use 48 Basic to enter the line). The <> is symbol shift/w.

SAM COUPE ARCADE DEVELOPMENT SYSTEM

At last, the amazing new games creation system from Glenco Software.

ARE YOU FED UP WITH THE LACK OF GAMES FOR THE SAM COUPE ?

Well, now you can write your own !!!

- ① The SCAD system will allow anybody who can program in BASIC to write complex and exciting arcade games or graphics demonstrations with ease.
- ② SCADs is supplied with an extremely comprehensive 200 page ring bound manual, explaining all of the powerful commands in great detail.
- ③ The SCAD system is extremely easy to use. You could be writing your first game within hours of reading the SCADs manual !
- ④ Write amazing games to challenge all of your friends.
- ⑤ All games written using SCADs can be sold commercially.

SCADs IS ALL YOU MAY NEED TO START YOUR OWN COMMERCIAL SOFTWARE HOUSE

- ✓ 64 On screen sprites
- ✓ Large number of sprites supplied
- ✓ Large 200 page A5 manual in ring binder
- ✓ Up to 255 scenery graphics
- ✓ Over 60 new BASIC commands
- ✓ Sprite paths
- ✓ Complete game, supplied with remarks
- ✓ Out-of-this-world sound effects
- ✓ Comprehensive room editor
- ✓ Over 250 screens/rooms
- ✓ Automatic collision detection
- ✓ Proportional characters sets
- ✓ Up to 255 sprite images
- ✓ WIMP designer environment
- ✓ Ladders, stairs and conveyor belts
- ✓ Automatic missile firing sprites
- ✓ Automatic animations.
- ✓ Joy-stick/keyboard control

What the Papers Say

SU, NOV '92 : "...allow you to produce some pretty stunning computer games", "a thoroughly impressive package", "Go for it", **OVERALL SCORE 93%**

ENCELADUS OCT '92 : "immaculately presented", "more versatile", "overall I'd recommend SCADs", **OVERALL SCORE 94%**

OUTLET, OCT '92 : "polished", "more advanced", "superior manual", "superior demonstrations", "Excellent"

Complete SCAD
System

£24.95

28 Day money-back guarantee if not entirely satisfied

Glenco Software

1 Osborne Road, Oxbridge, Stockton on Tees, Cleveland,
TS18 4DJ Tel (0642) 604740

Before knowing about the hardware solution, I used to MERGE such a line in many Basic programs which only ran in 48k. With programs which use interrupts, the problem is a bit more tricky, and such programs need to have their interrupt routines patched so that "I" is set to zero just before calling RST 56 and put back to its normal value immediately afterwards.

Our grateful thanks, Miles. I have quoted your letter virtually in full, because this seems to be a cure which a lot of people have been waiting for. There is just one point of ambiguity, and an important one, at that. I assume that you mean two separate 100 pf diodes; one across diode 35, and one across diode 33. Please let Bob know immediately if there is any alteration to this instruction. And readers, please ring Bob to check if there is any problem before attacking your+2's pcb with the hot iron!

Finally, Miles would like to hear how others get on with these modifications. So do write in and let us know.

Now, back to SAM, and over to those nice little programs which Chris Dodd sent: you know, the ones we've featured for the last few months. Here is the final batch from his disc...

First comes "frac" which is, of course, a fractal program, and draws a nice little pattern on SAM's screen. Come on, beginners (particularly), and seasoned doodlers alike; it couldn't be easier to type in. Makes that old Christmas pud from the freezer go down much more sweetly...

```
10 MODE 1: PALETTE : PAPER 0: BORDE
R 0: PEN 7: CLS #
20 LET x=0.3: LET y=0.4
30 LET b=x
40 LET x=y+1-1.4*(x*x)
50 LET y=0.3*b
60 PLOT x+70+120,y+150+80
70 GOTO 30
```

Next is "planets". "Planets" plots random stars across the screen, then

coloured planets (some complete with Saturn-like rings), lit by the moon on the right, gradually appear, one by one...

```
1 MODE 4
10 BORDER 0: PAPER 0: PEN 7: CLS
20 FOR I=1 TO 100: PLOT RND*255,RND
+173: NEXT I
25 LET F=0: FOR T=1 TO 100: REM NUM
BER OF PLANETS
30 LET CL=RND*5+2
40 LET XC=RND*195+30: LET YC=RND*11
5+30
50 LET S=RND*30
60 FOR K=-8 TO 8
70 IF INT (K)=0 AND F=0 THEN PLOT I
NVERSE 1: OVER 1:XC-L*2,YC: DRAW
PEN CL:L*4,0: LET F=1
80 LET X=SQR (S+S-K*K)
90 LET X2=2*X
100 FOR L=-X TO X
110 PLOT PEN CL: INVERSE 1:XC+L,YC+K
: IF RND*X2-X<L THEN PLOT PEN CL
:XC+L,YC+K
120 NEXT L
130 NEXT K
140 NEXT T
150 PAUSE 0
```

Next is "web". Is it a parabola or a hyperbola? I can't remember, but it's the first time I've seen one growing out of a red brick wall!

```
10 MODE 1
20 GOSUB 240
30 GOSUB 60
35 FLASH 0
40 GOTO 40
60 FOR a=80 TO 0 STEP -10
70 PAUSE 25: LET r=a/(180/PI)
80 PLOT ox-150+COS (r),oy
90 DRAW ox-(ox-150*COS (r)),oy+150*
SIN (r)
110 LET x=-60*COS (r)
120 LET y=90*SIN (r)
150 NEXT a
170 RETURN
240 BORDER 0: PEN 7: PAPER 0: CLS
250 LET ox=232: LET oy=8
260 FOR y=1 TO 20: PRINT PAPER 2: AT
y,29: " "
270 NEXT y
280 FOR y=oy-1 TO 165 STEP 16: PLOT
ox,y
290 DRAW 16,0: PLOT ox,y+8: DRAW 16,
0: PLOT ox+8,y+8: DRAW 0,8
```

```

300 NEXT y
310 PLOT PEN 4;ox+8,cy-1: DRAW PEN 4
   :-232,0
320 RETURN

```

And finally, "square 2". Ever seen a square gramophone record?

```

5 MODE 1
10 LET x=127: LET y=88
20 PLOT x,y
30 FOR n=5 TO 160 STEP 10
40 DRAW 0,n: DRAW -n,0: DRAW 0,-(n+
   5): DRAW n+5,0
50 NEXT n

```

Our thanks to you, Chris, for a refreshing set of nice shorties...er; got any more???

I say this with real feeling, for Chris' programs have produced several additions already. For instance, Alan Cox (again), mentions that his (Chris') "square" is a lesser version of the classic "Strange Patterns" (see, for example, "Your Computer", December 1982). Here's Alan's SAM version of "Strange Patterns".

```

3 REM STRANGE PATTERNS
4 PAPER 7: CLS
5 MODE 1
10 LET y=INT (RND*70)+100,x=INT (RN
   D* 30),z=INT (RND*3)-4
20 FOR r=y TO x STEP z
30 PLOT r,r: DRAW 0,175-2*r
40 DRAW 255-2*r,0
50 DRAW 0,-175+2*r
60 DRAW -255+2*r,0
70 PEN RND*5
  OVER 1
90 PAUSE 10
100 NEXT r
110 GOTO 10

```

Cheers, Alan.

And while we are dealing with SAM bits and pieces from Alan, let's look at some further comments. Alan recently had to create a lot of DATA lines in a Basic program to give the year, the oldstyle date and the newstyle date for Easter for the years 1583 to 1752. Ettrick apparently knows what he was doing, but the rest of us are quietly boggling. Anyway, since

entering a lot of DATA statements is boring and error prone, Alan decided to make KEYIN earn its keep. Here is the resulting program fragment, a useful technique indeed, and one that all of us will find a use for sooner or later - tough if we haven't got a SAM; we'll just have to type it in! For the luckier ones among us...

```

10 REM data entry program
20 FOR y=1583 TO 1752
30 CLS : PRINT "YEAR ";y
40 INPUT #2;"Enter" oldstyle date
   " ;a$;" newstyle date ";b$
50 KEYIN "10"+STR$ (y-1573)+" DATA
   "+STR$ (y)+" ;"+a$+" ;"+b$
60 NEXT y
1010 DATA 1583,31.3,10.4
1011 DATA 1584,19.4,1.4
1012 DATA 1585,11.4,21.4
9998 STOP
9999 SAVE OVER "data_in"

```

"data_in" makes things easy. A couple of comments. Firstly, note 1573, not 1583 in line 50. If you use 1583 and do nothing about it, you end up with the first ten DATA lines at 100 to 109, only then switching to what you wanted (1000 onwards), though actually starting at 1010.

Secondly, Alan mentions that the same technique could obviously be used to enter DATA lines for programs that POKE in machine programs. You would need to adapt the KEYIN line to add the ampersand necessary for HEX data. DATA lines allow decimal numbers and some HEX numbers, for instance those that start with a letter which are taken to be variable names, and which can be "corrected" elsewhere in the program. DATA lines will not, however, allow, for example, 8F, which is neither a decimal number nor a valid variable name. Maybe someone out there has a solution. What about it, folks?

Well, that's all for now, folks. sorry if your contribution has not yet appeared: if it's reached me, it will. Please keep on sending your contributions to John Wase, Green Lays Cottage, Bishampton, Pershore, Worcs WR10 2LX. And do have a good new year! Cheers for now!

PROBLEM SOLVING WITH YOUR COMPUTER

By:- Don Thomason.

This is to be a short series examining the capabilities of a computer in solving puzzles and problems. It shows that quite a lot of help from the user may be needed in this type of task. The programs were originally written for the Spectrum, but everything should run on the SAM as well.

Puzzles and problems are usually posed in text, which the computer does not understand. For example:-

"Members of the Dooleydale Supporters Club were asked to add 1p to their normal annual subscription, which is less than £4, the extra to be used to buy a farewell present for the retiring club secretary. All the members (except, of course, the secretary) complied, and the total sum paid in was £2088.60. How much was available to spend on the present?"

In theory, it would perhaps be possible to write a very complex program to analyze the text and convert it into symbolic form, which the computer could understand, but that would only solve part of the difficulty. Where a human mind would see fairly quickly that the problem is only soluble on certain assumptions, and would contribute extra conditions based on general knowledge, the computer might well find no basis on which to approach the task. The human approach often depends on special knowledge of a mathematical quirk of some kind, such as the characteristics of prime numbers.

PRIMES

Prime numbers are odd, in more senses than one. If a number is not odd, it is not prime, since it is divisible by two. In a broader sense, primes are odd because they tend to

exhibit unexpected characteristics. Having little or no meaning in the real world, they exist mainly as a mathematical concept. They could be regarded as being logically negative, in that they are discovered by ruling out all the numbers which are integral multiples of any integral other than unity (whole number that only divide by themselves or by 1 - clear now?). This process of elimination is called Archimedes' Sieve, because it sifts out the numbers that are not prime.

Right, type in the program shown in below which performs this task. The primes are set up in an array, the size of which must be chosen to suit the amount of memory available (SAM users will really benefit here). Setting up the array can take some time, so it is a good idea to store the result for future reference, use SAVE d1"PRIMES" DATA A{).

Listing 1. Archimedes' Sieve.

Note: array is DIMed for 48K Spectrum.

```

100 DIM A(3400)
110 LET A(1)=2
120 LET X=2
130 LET Y=3
140 LET Z=1
150 LET P=Y/A(Z)
160 IF INT(P)=P THEN GOTO 210
170 IF P>=A(Z) THEN LET Z=Z+1: GOTO 1
   50
180 LET A(X)=Y
190 PRINT Y,
200 LET X=X+1
210 LET Y=Y+2
220 GOTO 140

```

The first location of the array is set to 2, as starting point. X, the pointer to the next array location to be set up, is initialised to 2. Y, the next number to be tested, is set to 3. Z, the pointer to the number to be

used by the test, is set to 1. A loop is entered at line 150. $P = Y/A(Z)$, and if P is an integer Y is not prime, so the routine drops out to line 210.

Otherwise, the routine loops to line 150 until P is equal to or greater than A(Z). There is no point in taking the process any further, as any integral divisor would have appeared by then.

If line 180 is reached, Y is prime, and it is entered into A(X) and displayed. The display is not essential, but it gives you something to look at and tells you how the process is getting on, remember that as the program runs the finding of primes will slow down. X is incremented, and the routine goes on to line 210, where Y is incremented (by two, as only odd numbers are relevant). The routine loops back to line 140 to reset X and start another test.

PRIME PATTERNS

At first glance, a table of primes seems to show some sort of pattern. Numbers ending in 0,2,4,5,6,8 have been eliminated, leaving only numbers ending in 1,3,7,9. When this has been taken into account, the pattern begins to fade away.

However, try Listing 2, which prints out the difference between the squares of successive primes, divided by 24. Either add it to the end of listing one and start it with GOTO 300 or add a line to reload your saved array.

You might expect to see a jumble of non-integral results, but after an initial flurry the results are all integral. Does this suggest a way to determine primes directly?

Listing 2. Difference Of Prime Squares

```
300 FOR N=1 TO 100
310 PRINT (A(N+1)*A(N+1)-A(N)*A(N))/24
    |
320 NEXT N
```

Well, no, not really. Put the lower

of the two primes as L and the difference between the primes as D and the difference between the squares is $D*(2*L+D)$, the product of the sum and difference of L and D. Since all primes are odd, D must be even, and L is not a multiple of three.

If L is one more than a multiple of three, D cannot be two, as that would make the upper prime a multiple of three. D must be $6*X+4$ or $6*X+6$, where X is an integer. In the first case, the difference of squares works out as:-

$$12*(3*X+2)*(X+1)$$

where $L=3*T+1$, Y being another integer, which must be even, to make L odd. One bracket or the other must be even, so the difference in squares must be divisible by 24. Similar working for the other cases gives the same result, but the reader is invited to confirm that for himself.

The main point of this excursion into mathematics is to suggest that some interesting relationships between primes can be found by those who care to look for them.

PRIME SPIRAL

Listing 3 below shows another oddity of primes. It works best on computers like ours that will plot single pixels. I did try it a long time ago on a ZX81 it wasn't half as good.

Listing 3. The Prime Spiral.

```
400 CLS
410 LET X=128
420 LET Y=87
430 LET B=1
440 LET C=0
450 FOR K=1 TO 173 STEP 2
460 FOR L=1 TO K
470 GOSUB 1000
480 LET X=X+1
490 NEXT L
500 FOR L=1 TO K
510 GOSUB 1000
520 LET Y=Y+1
530 NEXT L
540 FOR L=1 TO K+1
550 GOSUB 1000
```

```
560 LET X=X-1
570 NEXT L
580 FOR L=1 TO K+1
590 GO SUB 1000
600 LET Y=Y-1
610 NEXT L
620 NEXT K
630 STOP
1000 IF C<>A(B) THEN GOTO 1030
1010 PLOT X,Y
1020 LET B=B+1
1030 LET C=C+1
1040 RETURN
```

X and Y initially point to the centre of the screen. B points to the array of primes, and C counts off the points plotted. The succession of FOR loops produces a 'square spiral' plot, and the subroutine lights up each point that corresponds to a prime number. Again, the line numbers allow you to enter it after the previous listings if you want to.

When run it will be evident that the pattern is not entirely random. The primes tend to fall in lines, a fact that has yet to be explained in full by mathematical theory.

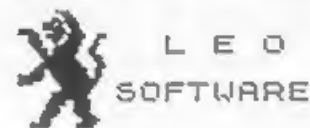
The amusing point about the display is that only a few years ago it was cited as a demonstration of the power of big mainframe computers, and now it can be run on a fairly humble micro...

LOOKING AHEAD

Next month, a program to solve the Dooleydale problem will be offered. That will give you a chance to try out your own ideas on the subject. You have at least been given a fairly broad hint....



Traction the best means of defence is attack



We have a very full range of Educational Software for both School and Home use. The range embraces Infant and Junior work, and covers the new NATIONAL CURRICULUM requirements in Maths and English.

Programs are available for the SAM Coupé and all Spectrums from the 48K onwards - even the +2A - and will work in 48K or 128K modes. They can be supplied on cassette, microdrive cartridge and most types of disc.

SAE for lists, please

B. ~~XXXXXXXX~~

25, CHATSWORTH GARDENS,
SCARBOROUGH,
NORTH YORKSHIRE,
YO12 7NQ.

Phone, any time, 0723 372621.

**SPECIAL
READERS OFFER**
**BLUE ALPHA's
VOICE-BOX**
For The SAM Coupé.
Save 50%
Original Price £39.99
NOW ONLY £19.50

ADD SPEECH TO YOUR PROGRAMS
Comes complete with software and manual

Limited Stock - First Come, First Served.

Send Cheque/Postal Order or Cash To:-

Format Publications (Voice-Box Offer),
34, Bourton Road,
Gloucester, GL4 0LE,
England

Overseas Customers Please add £2 Postage

WEST COAST COMPUTERS

West Coast Computers Ltd,
Abertant Centre For Enterprise, Rhyd-y-fro, Pontardawe, West Glamorgan, SA8 4TY.

Below you will then find details of the range of SAM hardware that is now available from us. Some items we know will be in great demand so we deal with orders on a strict 'first come - first served' basis.

CODE	DESCRIPTION	PRICE
W1001	SAM - 512K - Single Disc Drive Fitted.	£199.95
W1002	SAM - 512K - Dual Disc Drives Fitted	£274.95
W1003	SAM - 512K - Plus External Drive Interface. [Allows you to use your own DISC(PL)E/PLUS D 3 1/2" Drive]	£149.95
W1101	SAM Internal Disc Drive Unit.	£79.95
W1102	Parallel Printer Interface. (SPI)	£24.95
W1103	RS232/Parallel Interface (COMMS).	£34.95
W1104	1 M.Byte External Memory Pack. (Needs MasterDOS).	£79.95
W1105	Card Cage (Sambus) - needs MasterDos for real-time clock.	£49.95
W1106	SAM Mouse System.	£39.95
W1107	External Disc Interface (Includes Parallel Printer Port).	£34.95
W1108	Internal 256K Upgrade (for older SAMs with only 256K)	£29.95
W1201	SAM Power Supply.	£24.95
W1301	SAM Parallel Printer Cable (BBC type)	£9.95
W1302	SAM to TV/Monitor Scan Cable	£9.95
W1303	MIDI Cable Set	£6.95

E.& O.E. Prices valid, subject to availability, until 1st September 1993.

UK Postage & Packing: Add £10 for computers (sent by insured carrier). All other items add £1 per item (max £5).

Overseas customers: Please write for quote on Airmail Insured Delivery Service.

Write your order clearly on a reasonable sized piece of paper, state your name, address and phone number. Cheques, Postal Orders, Euro-cheques should be made payable to West Coast Computers Ltd. We will try to dispatch your orders as quickly as we can - however please allow 28 days to be on the safe side.

There are other item not listed above (including the long awaited Video Digitiser) which will be available in the next few months - watch out for our next advert.

INCLUDE STRINGS

In Spectrum Word-processing

By:- Bob Bates.

Tasword is the old established wordprocessor for the Spectrum and is the favourite of many, but recently I have been delving into THE LAST WORD and the WRITER to see what goodies they contain.

My wife is a teacher and has made heavy use of TASWORD to prepare worksheets and reports but with the vast increase in administrative work and report writing following the introduction of GCSE and the National Curriculum, I decided to see if the SPECTRUM could reduce her hours of work. Tasword was no help but the STRING INCLUDE function of T.L.W. and the WRITE INCLUDE function of THE WRITER looked interesting. These can both be used to include standard phrases in the text.

STRING INCLUDE with THE LAST WORD

According to the manual, up to 26 character strings can be "LET" in BASIC and then inserted into the text automatically on screen or at print time. The former is more convenient as they include string is then automatically formatted to the current margins and columns per line prior to printing.

However, it is more complicated than that because eleven character strings are used within T.L.W. basic and there is actual or potential for interaction with the "include strings". My experience with these strings can be summarized as follows:-

b\$ Used for various purposes, eg to collect the date string. The date is poked into memory and is also passed to z\$.

b\$ CAN be used provided that the program is restarted after return to basic by GOTO 9999 (or

RANDOMIZEUSR 65154) and NOT GOTO 0 or OPTION 1 from the menu.

g\$ Used in several places, blanked in line 3500.

g\$ CANNOT be used.

d\$ Used to store the drive number when preloading files from main menu.

d\$ Can be used but will be corrupted after using the preload file option on the main menu. NOT corrupted by the file load/save option (Mode "S or L") from within the text! This is in fact a file merge routine so ZAP the pre-existing file.

n\$ Holds file name for saving and loading.

n\$ CAN be used but must be redefined after saving and loading files.

h\$ Holds the header and footer strings defined from the main menu option 4.

h\$ and **f\$** CAN be used but will be corrupted by, and will corrupt, headers and footers. Reset after use of headers and footers; check headers and footers before use.

p\$ Used to store the status of header and footer. Set to "ON" or "OFF" in line 3445.

p\$ CANNOT be used.

u\$ Used in the mailmerge routine in line 3380.

u\$ CAN be used if mail-merge is not required. May need to be redefined after mail merge.

MACHINE CODE

WITHOUT THE TEARS

vS Used in the DATAFILE routine in line 9510.

vS Can be used but may need to be redefined after datafile work.

zS As vS above

zS Used to hold date.

zS Can be used provided that the text file is entered by GOTO 9999 or RANDOMIZE USR 65.54.

Therefore, fifteen strings can be used without problem, a further nine strings can be used with precautions and two strings cannot be used at all. In use, the "INCLUDE" string must first be let in basic. Fortunately T.L.W. reserves some lines for the user's own basic from LINES 81 to 1999. In practice, when the program returns to BASIC from the text file it goes first to LINE 1 through line 20 THEN jumps to LINE 1000 so it is convenient to insert the extra BASIC at LINE 1000. T.L.W. basic can therefore be modified at line 1000 to MERGE and initialize banks of inclusion strings. Modify T.L.W. BASIC as follows:

```
1000 PRINT AT 12,5;"MERGE STRING BANK?
      y/n": INPUT as
1002 IF as="n" OR as="N" THEN GOTO 20
      00
1005 CLS : PRINT AT 12,5;"ENTER NAME OF
      STRING BANK": INPUT as
1006 MERGE d1;as
1007 GOTO 1010
```

Now when you load T.L.W. or return to basic you will be invited to load a string bank. Prepare string banks on disc as follows:

```
1010 LET as="aaaaa dddd jjjj kkkk llll
      ". LET cs="lllllllll www rrrr sss
      s 9999 "
1020 LET ds="dd eee fff"
1030 LET es="": LET fs="": LET hs="":
      REM "blank unused strings"
1040 RANDOMIZE USR 65154: REM "Final 1
      ine of the string bank file to re
      turn to TEXT FILE"
```

According to the manual up to 4000K

of inclusion text can be defined but if a large amount is to be used then space must be reserved for the extra BASIC and variables by altering the share of memory between text and BASIC. T.L.W. text is held at RAMTOP +2 is at 30002. Move RAMTOP by ENTERING the direct command CLEAR nnnnn eg CLEAR 37000. This will leave 12K for the text file. If at any time you get the "out of memory error" raise RAMTOP by direct command and continue as before. Warning:- any text in memory will be lost.

Enter the new "CLEAR ADDRESS" to line 30 and 40 of T.L.W. BASIC for future use. Any files saved by this version of T.L.W should only be LOADED back into the modified version.

In use, type as normal until it is time to insert a string, type the appropriate name, pronoun or conjunction then enter "STRING INSERT" mode (EXTENDED MODE, SYMBOL SHIFT I) and follow the prompts to inspect the string and enter it to the text. Now each report can begin and end with a handcrafted sentence separated by the appropriate inclusion strings to provide a rounded paragraph

WRITE INCLUDE WITH THE WRITER

For most purposes 24 strings are sufficient but can become a little repetitive when many reports are being prepared, hence the need for several banks of strings in T L.W.

THE WRITER provides a "string include" function but with the strings stored on disc so up to 80 strings and 780k of data can be online (160 strings, 1560K in a dual drive)!

To prepare the string banks, LOAD "THE WRITER" and enter the INCLUSION string between BLOCK MARKERS (obtained by GRAPHIC M) Call the "EDIT" menu and select the WRITE (to disc) option, enter the string name or number and press enter. When the string is saved return to the text file, DELETE BLOCK MARKERS and enter the next string between new MARKERS. Save as before.

Turn to page 25.

Part 15.

Virtually every computer program needs to be able to determine whether a keyboard key is being pressed, and if so, which one. Both Sam and the Spectrum, while running a program normally stop what they are doing 50 times per second and scan the keyboard. On the scan, both computers use two system variables which we can tap into to discover what key has just been pressed

One, at 23611, is called FLAGS (Don't confuse the FLAGS variable with the FLAGS register, by the way - they are two entirely separate things.) If a key has been pressed, BIT 5 of FLAGS is set to indicate a new keypress, and the code for the key pressed is stored at 23560 in a variable we shall call LASTK, which is what it is usually called in Spectrum circles. Sam technical manual calls it KHHEAD Using these two variables we can write a simple little library routine for collecting the code of a key pressed, which we shall call KEY.

```
LASTK EQU 23560
FLAGS EQU 23611
KEY LD A,(FLAGS)
      BIT 5,A
      JR Z,KEY
```

The addresses of the variables are assigned. The routine waits for a keypress via a loop that keeps checking BIT 5 of FLAGS until its set (indicating a key has been pressed).

```
LD A,(LASTK)
PUSH AF
```

As soon as there has been a keypress we retrieve the code from LASTK and store it

```
LD A,(FLAGS)
RES 5,A
LD (FLAGS),A
```

By:- Carol Brooksbank.

We reset BIT 5 of FLAGS so that everything is ready for when we want another keypress

```
POP AF
RET
```

The routine exits with the code for the key just pressed in the A register.

Save that as a library routine, and we will now write a short program to make use of it and show that it works. The program will print the characters on screen as you press the keys.

```
ORG ????? (You can choose
              your own ORG
              address)
START CALL KEY
      CP 226 (Spectrum only)
      CP 177 (Sam only)
      RET Z
```

We need some method of knowing when to exit from this program so that we can get back to BASIC. The program begins by calling KEY to get the code for the key just pressed in A. The key to press when we want to exit will be STOP (SS/A on both machines). Although the key is the same on both, the code used for STOP is not, so be sure to enter the right code for your machine. CP is used to check whether the last keypress was STOP, and if so, we exit.

```
PUSH AF
LD A,2
CALL 5633 (Spectrum only)
CALL 274 (Sam only)
POP AF
RST 16
JR START
```

This part is very familiar to you, opening the channel to the upper screen and using RST 16 to print the character.

Software for the SAM COUPE

£12.50 **SC_ASSEMBLER**

If you have been reading the much praised article in the Format magazine 'Machine Code Without The Tears' by Carol Brooksbank and are new to the fascinating world of Machine code

SC ASSEMBLER is the ideal program to help you, thanks to the unique automatic autotab editor designed to help the absolute beginner.

Review in 'Outlet Issue 53 Jan 92 "Simple enough for the beginner powerful enough for the expert".
Format vol3 no12 "A delight to use, it's certainly the one for me".
Highly recommended by Carol Brooksbank

£12.50 **SC_FILER**

A POWERFUL
SAM COUPE
DATABASE

99% Machine code. Data compressed to allow massive storage of data. You can set up the database to your exact requirements, with fields of any size position, colour and charset in 4 different Mode 4 layouts and printouts
Review in 'Sam Supplement' Issue 7
Very versatile userfriendly database
Outlet Issue 47 "Most professional looking file management program"
'Enceladus' Issue 7 definitive filing system, if you need to file anything but this". 'Fred' Issue 9/14 "I would recommend you buy SC.FILER" 'Excalibur' no3 "Best Database around 94%

£15.00 **SC_MONITOR**

SC_MONITOR is an essential utility to use with an Assembler to help understand and debug machine code programs. Single step each opcode to see what it does and the effects it has on flags, registers, memory and screen. Various special types of breakpoints will help pinpoint bugs and resets in programs. Unlike other monitors incl CP/M, this monitor copes with all opcodes paging types on SAM without crashing. There is also a super fast intelligent disassembler. SC_MONITOR comes with a large, comprehensive and easy to use manual with examples to help beginners

£15.00 **SC_AUTOBOOT**

SC.AUTOBOOT is a new exciting chip for the Coupe. When you now turn on the power to the Coupe with a disc already in the drive, (disc will not corrupt) the DOS will immediately BOOT up. Retn back to basic if no disc in drive. No need to eject disc, turn on power, wait 3 secs, insert disc and press F9. Remains 100% compatible with the most up to date ROM 3.0 chip, which software companies guarantee software to work with 100%. The chip also has a powerful reset button to Break into any program running. The chip is easy to fit with an easy to follow manual

£2.50 **SC_PD3**

A Completion of SC_PD1 (Specione-Spectrum emulator, Disc Utility, Screen Compressor 1) SC_PD2 (Screen Compressor 2), also included as a Bonus SC DISCLONE, a super exact clone disc copier.

MORE INFO

Just send a blank formatted disc & a SAE for Demos/Screen Shots/Detailed Information on current software from STEVE'S SOFTWARE

FAST ORDERS

If you need any of the above items quickly then just phone from 6pm-9pm, your order will then be despatched first thing next morning, when goods reach you, send a cheque or postal order for invoiced items

DUST COVERS

High Quality Dustcovers Pure White with Blue Rim Trimming, Waterproof, Machine Washable, Non Shrink, Non Fade
£5.50 SAM COUPE
£6.50 PRINTERS
£7.50 MONITORS

If Ordering Printer or Monitor cover Please state Model

STEVES SOFTWARE

7 NARROW CLOSE

HISTON
CAMBRIDGE
CB4 4XX

TEL 6pm-9pm
0223 235150

Order by post
to Steve's Software
7 Narrow Close
Histon
Cambridge
CB4 4XX
Tel 0223 235150

STEVE'S SOFTWARE is a member of TEAM SAM

Now add your library routine KEY and finish off with

```
END      EQU $
LENGTH  EQU END-START
```

Save your source code, assemble it and save the object code. Reset the computer, enter CLEAR (your ORG address-1), and load the code to your ORG address. Call the machine code from the ORG address - don't use PRINT USR to call it. As you press the keys, the characters will be printed on screen. On the Spectrum, DELETE will not respond, but the arrow keys will so you can go back and overwrite characters, though you have no cursor so you must use trial and error to see how far you have reversed, or count your keypresses. On Sam, DELETE will work too. Caps shift, symbol shift, etc. are taken care of so you can use capitals and signs normally. BS/A will return you to BASIC. You can even use LD A,3 before the call to the channel open routine, and use the computer as a typewriter - well, almost. Because of the way printers work, nothing appears on paper until you have typed in a whole printer line of text or until you press ENTER/RETURN. If you print to #3, nothing appears on screen either so you are working blind until you finish a line, but it is quite fun to try.

This little routine KEY will be all you need in most programs to read the input from the keyboard. If you want to test for a particular key, CP can be used. But it does have one drawback. It will not tell you if two keys are being pressed at once. Many programs use keys Q,A,O,P for cursor movement UP DOWN LEFT RIGHT. If you wanted to use, say, Q and P together to indicate diagonally UP/RIGHT, our routine would not help you. Try pressing two keys at the same time when running the demo program we have just written. One will repeat over and over again. The other will either print just once or not at all.

So we need a way of testing which will tell us whether more than one key is being pressed at a time. Up till

now we have been letting the computer do all the work of scanning the keyboard and discovering the code for the last keypress. Now we shall have to do some of that ourselves, and this is where things get a bit complicated, because the methods used by Spectrum and Sam, though very similar, are not quite identical because Sam has more keys.

The principle is the same on both - the information is read from a port using IN, an instruction you have met before. But when we used IN, I did not tell you in full what is going on when IN is executed.

The address of the port we want to read is sent to the address bus as a two-byte address - a word. Quite often, only the low byte of the port matters - when we read Sam's KMPR for instance, we only bothered about the low byte. In keyboard reading the high byte matters too.

There are two forms of IN instruction. The one we used previously was IN A,(N2) - where N2 was a port number. N2, in fact, is sent as the low byte to the address bus. Whatever was in A before the instruction - we will call it M1 - is sent as the high byte to the address bus, and the data byte from the port is read into A.



Fig 1.

The other method involves loading B with the high byte, C with the low byte and using IN r,(C) to read the

SPECTRUM KEYBOARD

LINE	BIT	HI BYTE		DATA BIT				
		BIN	DEC	4	3	2	1	0
A8	0	11111110	254	V	C	X	Z	C/S
A9	1	11111101	253	G	F	D	S	A
A10	2	11111011	251	T	R	E	W	Q
A11	3	11110111	247	5	4	3	2	1
A12	4	11101111	239	6	7	8	9	0
A13	5	11011111	223	Y	U	I	O	P
A14	6	10111111	191	H	J	K	L	ENTER
A15	7	01111111	127	B	N	M	S/S	SP

PORT 254

Fig 2.

bytes from the port into any one of the single registers. (Fig 1 demonstrates both IW commands)

Sam users who have had to install a new ROM chip will know that the keyboard is connected to the rest of Sam's innards by two membranes, one wider than the other. The Spectrum keyboard is connected in the same way. I will explain keyboard reading on the Spectrum first, because it is slightly simpler, but Sam users should read this too, because most of what I say applies to Sam as well.

On the Spectrum, the wider membrane has 8 wires, which are connected to the 8 bits of the upper byte of the address bus - BITS 8-15 and so are

known as address lines 8-15, or A8-A15 for short. The narrow membrane has 5 wires and is connected to the lower 5 bits of the data bus - and are known as data lines 0-4, D0-D4 for short.

Each of the address lines is connected to half a row of keys (5 keys) on the keyboard. Line A10, for instance, is connected to keys Q W E R T. When we want to activate that line to read one of those keys, the word sent to the address bus must have BIT 10 (bit 2 of the upper byte) reset, (we call it sending BIT 10 low) so the high byte must be 251, or BIN 11111011. If one of the keys is pressed, the bit corresponding to that key will be sent low to the data bus. BIT 0 is connected to Q, so if we

press Q, the lower 5 bits of the byte at the data bus will be 11110. (Bit 0 is always the key nearest the outside of the keyboard on a row, BIT 4 the one nearest the middle).

Fig.2 is a table of the high bytes for all the Spectrum address lines, the keys connected to each line, and the data bus bit for each key. If you use one of the later Spectrum models, and the key layout seems a bit odd, remember that it was designed for the original rubber-key Spectrum. Though some keys have moved about on the keyboard since those days, the keyboard map has stayed the same. The Sam keyboard map for these keys is the same, but Sam has a number of other keys too - we will look at the Sam keyboard in full next month.

So, to test for key Q, we should need to send the high byte 251 and the low byte 254 (the Spectrum and Sam keyboard port) to the address bus, and test BIT 0 of the data byte read into A.

```
LD A,251
IN A,(254)
```

or

```
LD B,251
LD C,254
IN A,(C)
```

would give us the data byte for keys Q W E R T in A. If Q has been pressed, BIT 0 will be 0, so

```
RRCA
```

will put Q's bit into the carry flag. No carry means Q was pressed, carry means it was not.

If we want to test for P as well,

```
LD A,223
IN A,(254)
RRCA
```

will give no carry if P was pressed. This will work even if both were pressed at once - in fact you can test all the lines of keys and list all the

ones being pressed if you like. If you want to test for key Q, you must use RRCA twice, to get bit 1 into the carry flag - and so on for the other keys.

You could check two half rows at once. If you sent as the upper address bus byte BIN 11011011, lines 10 and 13 would both be activated and all the keys Q W E R T Y U I O P scanned. The trouble is, if BIT 0 of the data byte was reset, you would not know whether P or Q was being pressed, or both at once. If you did not mind - if your response to P or Q would be the same - this would be a quick way of checking both.

That is as far as we can go this month. Next month we will look at how Sam handles all the extra keys, and I will give you a short program to test for keys Q,A,C and P - singly or in combination - which will use the little bits of code I have shown here.

- - - - -

Continued from page 20.

In use; type as normal until you wish to insert a string, call the EDIT menu and select the INCLUDE option. Name the string, follow the prompts to insert the string. The inserted strings will not be justified automatically so insert all of the strings with linking names and pronouns. At this stage the screen will look a mess so format the paragraph by (SYMBOL SHIFT Y) to neaten it up. Working from Microdrive, the process was too slow to save any time but from the DISCIPLE drive it is fast and efficient.

In summary, both programs modified as described can make significant savings in time. Once the string bank is loaded T.L.W. is faster in operation than THE WRITER but THE WRITER provides greater variety of strings ONLINE at any given moment.

Both 'THE LAST WORD' (Trojan) and 'THE WRITER' (Softex) are no longer produced, but you should be able to pick up a copy at one of the shows.



AVAILABLE

NOW,

ONLY FOR

THE

SAM COUPÉ

FOR

£29.99

FEATURES:

- Simultaneous voice functions.
- Capable of 2048 tones and 96 notes.
- Edit individual channels/left/right speakers.
- Built in music compressor, BASIC & M/C music drivers and interrupt drivers.
- Runs on 256/512, 1 drive SAM.
- Runs 6 channel music/FX every 50th of a second.
- Uses the FULL capabilities of the SAM's spectacular SAA1099 sound chip.
- ETracker gives total control of your musical talent with the greatest of ease.



Send formatted 3 1/2" disk and SAE for samples of ETracker music

FRED PUBLISHING, 40 ROUNDHILL, MONIFIETH, DUNDEE DD5 4RZ

The HELP PAGE

Edited By:- Kevin Gould.

Hello out there in Format land. Perhaps I should introduce myself as your new help page editor. Bob did the basics in December, I will give you a very quick fill in. My name is Kevin, I am 28 years old married for 8 years to Jenny. We have two kids. Son nearly 6 and daughter nearly 2. I work (well, get paid for doing something) as Assistant (joint) Systems Administrator in the computer centre of a group of companies.

Just before we start, reading the Dec 92 letters page I noticed M.D. Atkins letter. It seems many ex-S&SC readers used +3s. I have received several +3 letters but have no experience of J' discs, the DOS or CP/M. Perhaps Mr Atkins (or some other +3 user) would like to join Ray and myself on the Help Page panel, drop me a line if you are interested.

Right, onwards.. Tony Watson asked about Lords of Midnight on the SAM. Look in August 92 edition, page 36 column 2 and 37 column 1. This may help as may the following from Ray.- POKE (start addr of the Spectrum ROM + 3789),201. Most emulators start at 65536 but check it.

Next a long letter from Barry Smith which I have broken down into the following. I hope I got the questions right.

He runs a Speccy+ or 128 with Microdrives, 5.25 & 3.5 discs with a DISCIPLE, a Cannon BJ10 and a Timex Sinclair 2040 printer (for those new, the 2040 was a small printer that used thermal paper. I believe the original Sinclair used silver paper and the Timex 2040 used white)

Quite a mixture Barry, now the questions:- a) The Timex 2040 and DISCIPLE don't want to talk to each

other. b) Masterfile often locks up on load and loading is only from a previously SNAPPED file, this has become difficult because the SNAP button does not run the drive although the screen indicates "saving" and can't find an end point. c) He was intrigued by Shimon Young inhibit Patch. Firstly, the other Barry Smith felt he had DISCIPLE problems and appreciates the developed solution but felt the medicine was worse than the disease. d) The two drives work independently but not when both are connected to the DISCIPLE at the same time. e) He is unable to prevent the BJ10 from printing a ? at each Line Feed.

Right, here are some answers. a) Presumably the DISCIPLE SYSTEM file has been set up to use the printer port to drive the Cannon BJ10 printer. GDOS resets the computer's Channel Pointers from the switch-on values to those which are needed to run it's own routines. The Channel Pointers relating to the printer are not normally reset to the switch-on values again unless NEW is entered or the computer is reset. Therefore, to use the 2040 printer these pointers have to be reset to the switch-on values. The following routine will achieve this, using the relevant DATA line for the computer being used:-

```

10 POKE 11,1: REM Switch off port
20 LET N=PEEK 23631+256*PEEK 23632:
   REM Start of CHANS
30 FOR A=N+15 TO N+20: READ C: POKE
   A,C: NEXT A: STOP
40 DATA 244,9,196,21,80: REM 48K
OR
40 DATA 52,91,47,91,80: REM 128K
  
```

To return to the DISCIPLE printer port, enter POKE 11,0.

Now to answer b. Masterfile is easy to

convert to disc, follow the instructions in the manual for converting to Microdrive, and change the COPY that does the printing to SAVE SCREEN\$ in the basic. c. Open to you readers. Anyone help? d. Set one of the drives to drive 2. This is done using a dip-switch or jumper inside the drive as they all differ you will have to track down the right switch. e. The ? at the start of each line is probably the software sending a Line Feed (CHR\$ 10). Set your printer to do an auto Line Feed after Carriage Return and then set all software up so it just sends a CR (CHR\$ 13).

Next, a letter from M. Jones, he complains of not being able to enter some lines of a program printed in FORMAT recently. I am not sure what your problems are. Are you having problems actually getting line 1000 accepted by whatever you are using (my +2a in 48k mode accepted it). I am not sure what you expect to happen. Does line 9530 produce an error when run or what? If you supply me with further information then I will be happy to help you.

John Brown you are next. Certainly I will help you and thanks for making your problem so clear. He is using a +3 and has bought Specfile+ from SD Software. The manual says format a new disc, put your DOS system file on it then copy the files from the master disc to yours. He has copied everything successfully but he has no DOS file.

On the +3 the DOS is built into the ROM of the machine. Specfile+ was originally written for the DISCIPLE/PLUS D which both load their operating systems from disc - hence the need for DOS file. The +3 version comes complete with a sheet giving instructions - follow those.

Another +3 enquiry.. This from J.G.Burrows. He is using "The Last Word". He would like to run directly from Loader (I have just finished phoning Bob and it has just clicked what he means by Loader as I switched on my +2a - He means the LOADER option

in the menu). As you say you need to enter POKES, I guess you want a BASIC loader.

On the disc should be a file called "DISK" which is the first file loaded if a disc is in the drive when the LOADER option is taken (treated in the same way as Autoload is on DISCIPLE/PLUS D). Now it does not matter to the +3 what program DISK is, so first rename the existing program to something different, TLW-PROG for instance. Now write a BASIC program to do the pokes you want and use LOAD "TLW-PROG" as the last line. Then SAVE it using filename DISK and give it an auto-run LINE number in the normal way. Using the LOADER option will then load your BASIC first and once the pokes are done your program loads the main TLW one. As to your other questions, Tasword cannot be altered to give more than 64 columns (to my knowledge) and The Secretary is only available for SAM.

Next, from the unknown member (letter sent with no name, address, phone number, signature or member no). He/she must be an INBUG member as my name is not printed in any other computer magazine.

The question regards a Spectrum+ 1984 Issue 6A which apparently "does not work when switched on". I presume that you mean that on power up or reset you don't get the Sinclair Welcome Message for the following reason. S/he asks how s/he can test the voltage regulator (L7805CV) which is the thing that has three legs behind the power socket to see whether it is working. If this is O.K could it be the Z80ACPU. What other reasons are there?

I do not know how to test the L7805CV, my guess is that something has moved on the edge connector and blown the system. I suggest you get an expert to look at it for you.

Now, Ray with answers for SAM users.

S. Kenpees of Rotterdam wants to know about SAM USING. Thank you for your

listing. Although the SAM keyword list includes the word USING it was not implemented (along with a few others) because there wasn't room in the ROM. However, MasterBASIC from BETASOFT implements this and several other useful routines which expand the range of BASIC commands you can use. On your second query, the error reported on entering a null string to break out of your program is caused by the Procedure pseudo attempting to find a VALUE from a null string. To avoid this happening, you have to place line 450 (which tests the input for the null string), before the line calling PROC pseudo.

George Robson of Knuttingley writes of his experience of using the Messenger to transfer the five games on "Dizzy's excellent Adventures" to SAM. Four of the games were successfully transferred with only minor control problems, but "Spellbound Dizzy" ran at a higher than normal speed making control impossible.

Unfortunately some Spectrum games will run faster when transferred to SAM. It is a feature of the design of the Spectrum that machine code located in the lower 16K of RAM will run some 20% slower than code in the top 32K. This is due to the fact that the chip which controls the display (the ULA), takes priority over the processor when dealing with this area of memory, to ensure that the display quality is maintained. The SAM deals with the video display in a completely different manner so this reduction in processing speed does not occur. If the main control routines in a Spectrum program are in the first 16K of RAM, then when the program is run on SAM the action will be speeded up and there is nothing you can do about it.

Another follow up from a query in the December issue. This concerns re-dimensioning arrays. I was rash enough to say that unless you had MasterBASIC you could not re-dimension arrays on SAM without erasing the data. Well I was partly right, you

cannot directly re-DIM an array without erasing the data, but that perennial contributor to FORMAT, Etrick Thomson, has come up with a PROCEDURE to extend an array. I have changed Etrick's original program slightly to simplify it. The program moves the data to a temporary string then re-DIMS the original array and transfers the data back to it. As written it will only deal with single dimension numeric arrays but it can easily be modified to handle multi-dimension arrays and string arrays. The procedure is listed below, together with a small demonstration program (lines 10 to 50).

```
10 DIM N(10)
20 FOR J=1 TO 10: LET N(J)=J: NEXT J
30 EXTEND N( ),15: REM Extend the array to 15 records.
40 FOR J=1 TO 15: PRINT N(J); " ";: NEXT J
50 STOP
100 DEF PROC EXTEND REF X( ),L
110 LOCAL T$,X0,X1
120 LET X1=LENGTH (1,X( )),X0=LENGTH (0,X( ))
130 IF L>X1
140 LET TS=MEMS(X0 TO X0+5*X1-1)
150 DIM X(L)
160 LET X0=LENGTH(0,X( ))
170 POKE X0,T$
180 END IF
190 END PROC
```

Malcolm Jones has written again shedding more light on the question of connecting an INCONTERN VDU to his SAM, (Dec 92 Issue). Apparently there is an AE socket on the VDU which can be connected to COMP VID and GROUND on the Spectrum with good results. He wishes to use the VDU with his SAM but doesn't want to use the SCART socket for this purpose, and wonders whether it will be possible to make use of the output from pins 30c and 32c of the expansion port, bearing in mind he has a SAMBUS and Comms interface attached.

Well Malcolm, firstly apologies for spelling your name incorrectly - twice! There should be no problems in doing what you suggest, but have you

consider the third possibility of using the video output (pins 2 and 4) on the power socket? If you wish to retain the option to use the TV modulator in the power unit you would have to insert a double-pole/double-throw switch at some point and run a screened lead from the switch to the VDU socket.

Gerald Jess of Kings Lynn is having problems transferring a copy of MasterDOS to his own discs. The trouble arises because you are attempting to SAVE the MDOS from SAM using the address displayed in the directory instead of COPYING it from one disc to another. Once the code has been loaded by pressing F9 and BOOTING is complete, the ROM has relocated the MDOS to the last free page of memory, usually 3rd from last page, but this can vary depending on whether extra screens have been opened before BOOTING. If you wish to know the start address of MDOS enter:-

PRINT PEEK SVAR 450*16384*16384

Now, for an important announcement...

WRITING TO THE HELP PAGE:- As you will have seen from the December 92 edition, the help page is back under new management. I try to answer anything not SAM related (as I have not gone one). Ray and I communicate by disc and at the start of each month Ray sends me the disc with your questions/answers and his answers etc on it. This is where I start editing by combining the stuff I have with his and the end product is what you read in FORMAT.

This is where you, the reader comes in. If you are asking question(s) send me or Ray a disc or tape as follows:- A word processed letter (both of us use Tasword 2 on 3.5" disc, but tape is O.K. So, I believe, is ASCII (text minus any control codes). Call this cov lett. Put your name, address and membership number at the start, what your set up is, then the problem/question (or an answer you are giving to someone else's problem or

information you are providing for me or Ray (thanks in both cases)). With questions provide as much info as possible, take nothing for granted. If you are including program(s) and code file(s) then save them as such but do not autorun BASIC, instead make line 1 REM with the start line number. Send paper if you are using anything other than 3.5".

Pop your tape/disc into a padded envelope and enclose an additional stamp (whatever it costs to send) and it will be returned to you.

The reason. We have not the time to type in listings, which if you already have a problem could be made worse by retyping. The idea being load and run, that way your problem is being dealt with. Also, when it comes to editing the page for Bob, everything is on disc and just needs loading into Tasword 2 and editing to make sense. The disc is then sent to Bob and you see the results. PLEASE, help us to help you.

Just before we go this month. We have had a useful initial response to the request for information on your monitors/VDUs/TVs, but Ray would like to hear from a lot more readers if a useful survey is to be compiled. The information required (where available) is: type of equipment, stability of display, colour reproduction, pin connections, sound reproduction, cost, and any peculiar features.

Answering a question/providing info, anything not SAM To:-

Kevin Gould, Format Help Page,
2, Barleyfield Close,
Heighington,
Lincolnshire, LN4 1TX.

Anything SAM (or VDU info above) to:-

Ray Bray, Format Help Page,
Emsleigh' 4, Tidworth Road,
Porton,
Salisbury,
Wiltshire, SP4 0NG.

FILE MANAGER

For SAM

Reviewed By:- John Wese and John Croghan.

This is the review that nearly never was. It has been compounded by accident and sods law, pressures of work and problems of its own. It started off with several discs from Carol Brooksbank, for whilst a program sold by Betasoft is invariably interesting, detailed, and works, this was originally written by Carol for her own use.

For some time she had made extensive use of John Campbell's "Masterfile" for keeping the records of Coventry Diocesan Library; eventually, she ended up with, I think, five files (or was it seven) on those dreaded 3" discs on a Spectrum +3, since the total file length was far too long to fit inside the +3 in one go. Not the easiest way of doing things. Carol therefore has a familiarity with filing programs and the problems which they might generate.

Then SAM came along. Half a megabyte of memory, more in the memory backpack, 800k discs, MasterBasic, with its range of special sorting commands. This gave Carol the opportunity to write a filing program for her own use on SAM. And as she had already had problems with limited file size, and with everything inaccessible in machine code, she might be expected to produce something different. She did. It all worked out so well that she decided to rewrite it for general use. So that's when beta-test discs started dropping on my mat.

File Manager is written using MasterBasic which contains lots of new commands aimed at making life easier for sorters - those who have to sort ASCII code into alphabetical order, and selectors - those who have to select something, again on the basis of ASCII. Just what Carol needed. True, there was nothing there which

couldn't be made to work with normal SAM Basic, but the big advantage of using MasterBasic in this application is speed which, while not as fast as pure machine code, is far faster than conventional Basic. One useful trick is that File Manager can use RAMdiscs, this ups the speed stakes a lot.

Now I had problems, first with a faulty ROM. Then my SAMBUS started causing problems and I was getting nowhere fast. John Croghan, a colleague of mine with whom I often check programs had no such problems. The net result of this was the old adage "Once things go wrong, they go very wrong". Eventually, I handed the whole technical review side over to John, since I had no confidence that the odd bugs I found were not due to machine quirks, while he was happily using it to store all his extensive music library. So that led to the problem of two busy people trying to meet. Every time I was there, John wasn't, and the whole thing took lots of time. However, here it is at last. And, with time to look at it in depth, it's worth waiting for. John writes as follows:-

Computing began for me with Tasword 2 and Masterfile on the Spectrum and so I was delighted to hear about File Manager for my SAM, which promised to be as user adaptable as those two programs, while giving the chance to build a database that would not run out of room.

The main system used for testing File Manager has been a standard SAM 512k with a 1meg expansion pack fitted (although I have created the same file using 2 floppy drives with no expansion pack fitted). Making a start-up disc was very easy as the program notes come with clear details for using the program with all the

various SAM set ups, (including the 256k SAM) although two drives are essential to get proper benefit. In this way it was a simple task to create master discs for the two systems, as exiting to Basic from the Main Menu allows you to alter the program to suit your system, following clear instructions at the beginning of the manual.

File Manager is a Menu driven program with the options given in good detail with easily understandable descriptions for the various options in all menus. File creation, once you have created your personal boot disc, is a very simple matter clearly explained in the manual. Decide on a filename and the number of fields you require. The fields are given an identification letter, in my file A - J. You then give the fields a name (up to ten characters), and when finished you have an opportunity to change.

The hardest part of building any database for me is deciding how many fields to have (the maximum in File Manager is 26) but File Manager allows you to create spare fields just in case you may need them later. So I decided to have 5 spare fields, one more than suggested in the manual. They are not used by the program until you bring them into operation. It is a good idea to have fields 'A' and 'B' as the main ones, as this becomes very important for speed in searching and sorting later on, although there is a 'quicksearch' file that can be merged to search fields 'C' and below.

The file I was creating was of the songs by various artists on the many compilation LPs I had collected over twenty years as a DJ. When creating this file I had not been the owner of a CD player, but bringing two of my spare fields into play, using the Modify File Menu made my file able to cope with this new music medium, with no frustration of my attempts to create a comprehensive database of all the songs available to me on tape, LP and now compact disc. A database should be an organic creation in order to maintain its usefulness, and File

Manager's spare fields option gives one example of great opportunities for adaptation and additions to any file created using File Manager. The layout of the file is also user defined, either when creating the file or using the Modify File Menu later. To start you must define Layout 1, which is the basic standard layout used to input data, although you can design as many as you wish once Layout 1 has been set up. The only criticism of the various layout facilities is that you cannot display more than one record at a time on screen.

The layout is organized in windows (where have I heard that word before?). Each window is defined using co-ordinates. Initially you define Field Windows which will contain the individual information in a record. Here I made my only mistake as I did not leave enough room for the Text Windows which will contain the field names (if you wish) and so my text wiped out the beginning of each field window. The Text Windows appear in Layout 1 for every record, which helps when entering data in a record, as well as when searching and sorting. All other layouts are designed in a similar fashion, need not contain every field (or text windows), and I soon became very good at designing. A piece of squared paper is useful, but it is essential to write down your co-ordinates as you progress, especially if you wish for more than one field in a row.

When you have created the file structure the actual input of data is extremely easy. The screen appears with your Text Windows if defined, and the blank field windows ready to receive data. The field names are presented under the layout you've designed and you enter the information. Opportunities are available to change before entry, and then you wait while the record is added to the file. This is where the large expansion speeds up the input process, compared to using the two drives, where drive 2 stores the data.

Once the record has been added you

can add another copy of that record to the file. On pressing 'Y' you're asked about any changes, and by choosing and then changing only a couple of fields you have another record ready to enter. This is marvellous for one fingered typists like me, saving loads of time usually spent in re-typing the same information several times for certain fields. If you want to enter completely new data or exit you press 'N' for copying the record and are given the option to add another record or return to the menu.

I often try to personalize programs, and although no expert in Basic, I was able to alter this program with the help provided in the manual and the option to 'Exit to Basic' on the Main Menu. I mention it now because I wished to change the message "ADDING RECORD TO FILE" to "ADDING RECORD #n TO FILE", the value of n increasing by 1 each time. This then led to my wishing to have an extra option on the main menu 'Count Current Records'. This may seem trivial, but I found it very useful to regularly check how many songs had been added to the file. After entering the data for each LP or cassette I would write down the number of songs (records) on file, enter the next LP with say 32 songs and do a quick sum to check none had been missed, due to household distractions or phone calls from Bishampton!

Despite these efforts to avoid errors on entry, my limited typing ability mentioned earlier, and other changes needed after my first print out, meant several records had to be found and then altered. You can modify records as you view with File Manager which was on occasions most useful, but with my records reaching into the hundreds I found myself using the search facility. This was not fast, but certainly tolerable and very accurate. I mainly used this method despite the fact that the program offers a far easier route.

If you keep a record of the file pointers which are displayed with each record, it is very quick and easy to get the record you want to alter,

displayed on screen ready for modification. The only trouble was that I could not get the individual file pointer to print out with the relevant record, as they are when viewed or displayed on screen. This opportunity would be a most, if not the most, valuable addition to the program for all users.

Once the record you wish to modify is displayed on screen you have the opportunity to copy it whole or copy information from one field to another in the same record. You can also alter the data in any field or delete the whole record. These facilities all worked superbly and meant much greater and easier alterations than many other databases allow.

The search facility is comprehensive and is used in two ways. The first is that mentioned above i.e. to find a particular record (or group of records) for modification, display or printing. The second is to select a group of records in order to enable the file to be split. This was necessary once my file became too large to be sorted in memory. When first reading about this second use my heart sank, but it is a tremendously powerful and well documented facility.

The Sort facility is also very good, giving the option to sort the whole file or selected records on one field. There is the very useful option to Fine Sort, which allows you to sort on several fields, where you decide the fields to be sorted, as well as how many characters are to be considered during the process. This fine sorting gives very professional printouts, and is for me one the most impressive parts of the program.

For other slow typists there are great facilities in the Blocks options. As well as the expected save and delete choices, you also have the chance to fill a particular field in any selection list. You create the selection list of records with a search and can then fill any field in this selection with data, typing in the information just once. Any data

already in the field was automatically deleted. Needless to say I found this option very useful. You can also clear the information from a field in a selection of records in the same way.

Many database programs have frustrated me with their limited options for printing and the inability to change printer control codes within a program to suit my printer. I well remember Vu File problems with my Opus Discovery. This is most definitely not the case with File Manager. Firstly there are all the possibilities of designing your layouts, mentioned earlier. This means that you can design layouts specially for printing and see them displayed on screen as they will be printed. I was therefore able to design layouts that suited the three versions of my file mentioned above.

Secondly I have been able to use my Juki 6000 daisy wheel printer, as well as my Brother M1009. I think the program should be able to cope with most printers given the detailed instructions supplied and a good read of your printer manual. You also have the Exit to Basic option, again to enable you to set up the program with your particular requirements, thereby giving you the defaults you most often need. This greatly speeds up the printing process. The label facility gives another very sophisticated option, with many possibilities for user designed labels, right across the page if needed.

In conclusion, for those people who have always wanted an adaptable and easy to use database, File Manager is absolutely first rate. It has enabled me to create a database of my music collection, which I feel confident will hold all the data I will be able to enter in my Music File, but is flexible enough to suit other uses at home and for work. Not only that but it has provided me with the pleasure of being able to customise it.

File Manager is £12.99 from BetaSoft, 24 Wyche Avenue, King's Heath, Birmingham, B14 6LQ.

BLUE ALPHA ELECTRONICS

We are pleased to be able to offer a full repair service for Sam and Spectrum users. All repairs carry a 3 months guarantee against the same fault recurring.

Sam + PSU + 1 Drive *	£30
New PSU	£20
All Sam Interfaces	£18
Spectrums	£30
Plus D	£18
DISCIPLE	£30
MGT Lifetime Drive*	£20

*Disc drive repairs exclude cost of replacement mechanisms.

All prices include UK return postage, overseas customers please write for details of cost of postage and insurance.

ALSO AVAILABLE We can make and supply all types of cables - send us a Stamped Addressed Envelope with detail of cable required (pin-outs, length, etc) and we will send you a quotation.

Send cheque/postal order (Pounds Sterling Only) payable to:- Blue Alpha Electronics.

Blue Alpha Electronics,
Abernant Centre For Enterprise,
Rhyd-y-fro,
Pontardawe,
West Glamorgan,
SAB 4TY.
Tel: 0269 826260.



YOUR LETTERS



Dear Editor,

The January issue of 'FORMAT' has just made its ever-welcome arrival through my letter-box, and, as usual, I've found its contents instructing and entertaining. I appreciate that you and your invaluable help-mate Jenny have had little time to prepare this issue, so I was prepared for a few minor slip-ups (slips-up?) in the text, but not for the number I spotted - without even trying, I may say - on my first skim through, and when I found a real beauty in a quarter-page advertisement, I felt I ought to let you know! It wouldn't be right for you to take over from 'The Grauniad', as it was once known. Here's a list of spelling and/or grammatical errors I've spotted, and I've a feeling that there may be more.

Page 4 - Under heading 48K keyboards, 2nd line "who's should be "whose".

Page 5 - 2nd column, 2nd para, 1st word should be "And".

Page 5 - 2nd column, 2nd para, 3rd word "wont" should be "won't".

Page 22 - 1st column, 1st letter, 3rd line "it's" should be "its".

Page 22 - 2nd column, 1st letter, 11th line "isle" should be "aisle".

Page 22 - as above, 16th line "pit falls" should be "pitfalls".

Page 22 - 2nd column, 2nd letter, 15th line "low" should be "lo".

Page 23 - 1st column, Ed's comments, 12th line "padantic" should be "pedantic".

Page 23 - as above, 16th line, insert "of" before "one".

Page 23 - 2nd column, Ed's comments, 7th line "heavy" should be "heavily".

Page 25 - Alan Cox's letter (iii), line 3 "unconnected" should be "connected".

Page 26 - "Blue Alpha's" advertisement. "SPEACH" should be "SPEECH".

I'm not nit-picking, really, just

trying to be helpful.

All the very best to all at "FORMAT" for the new year.

Yours sincerely, Bert Seymour.

These *\$##* wordprangers don't no hows to spill do thay?

Oh well, Jenny's in the doghouse, I'm round the bend, and it did give you something to do.

Back toooo the dwawing bord.... Bob.

Gosh, I hope I haven't made any mistakes typing your letter in, ah well it was Christmas when we put the January FORMAT together. I'll promise to try harder in 1993 but if I don't then I'm passing the spell checking on to you to do each month. Jenny.

Dear Editor,

As there is no more SAM OUTLET I am sending this letter to you in the hope that someone, who can't get the TETRIS game on OUTLET 65 to work, will read it. In frustration I started hitting all the keys on the keyboard and found the following:- F4=Coloured Blocks, F5=Grey Blocks, F7=Fade Picture, F8=Return Picture, 6=Block Left, 7=Block Right, 8=Fast Drop, 9=Pause, 0=Rotate Block or Start Game.

I hope this will help some sad ex SAM OUTLET reader to enjoy this excellent, addictive game.

Yours sincerely, Gordon Henderson.

Dear Editor,

I would just like to say how happy I am with FORMAT and my SAM no matter how uncertain the future is.

One area of FORMAT I would like to see expanded is the News Section (I would like to see all of it expanded of course). Your Sinclair has rather a lot of news on SAM issues, maybe for those of us who cannot afford both, you could rob (steal, borrow) the news

items from Y.S. If not I would be happy to glance at it and send in the items myself.

Like an accelerator for the SAM from Blue Alpha, more rumor than fact, which would speed up the SAM's processor fourfold.

I am a first year Electronic Engineering student and hope to be able to lend my knowledge to help our SAM in years to come.

FORMAT is deadly, I read it from cover to cover every month, I hope it continues as good as it is now.

Yours sincerely, Paul Matthews.

FORMAT "Deadly"? We are far to laid-back to be anything other than "Mostly Harmless".

As to pinching news from other mags!! Don't you realize - they read FORMAT to get the real news - not the other way round. I try not to print rumors, facts are much better. Yes Blue Alpha are looking at an accelerator board for SAM but it is still just an idea in Adrian's head. If and when a working prototype is produced you will read about it in FORMAT first. Ed.

Dear Editor,

Many thanks for sending the Utility Disc #1, the address book is exactly what I needed and works perfectly, although for anyone who buys it without being familiar with the old OCP program would benefit greatly if more instructions were provided. This program could sell by itself.

The other programs are good value, especially RECALL and FILE COPIER, however I am a bit disappointed with the DUAL CAT.FORMATTER as for some reason it will not function when I tried to incorporate it in my version of TASWORD 2 (40K), though it works fine by itself. I find that my little AUTOCAT prog is invaluable with DUAL CAT. to flip from one cat to the other. I offer the following errata:-

a) My copy of DUAL CAT.FORMATTER has an error, a poke keyword is typed wrongly and stops the program with an error code.

b) FILE COPIER is much improved by the additional line as follows:- 9065

```
PRINT ,,,, : CAT * ! This displays the
abbreviated catalogue in the
appropriate place on the input screen
and you can then select a file from
the display.
```

```
c) AUTOCAT PROG.
5 SAVE d1'autocat' LINE 10
10 CAT 1: LET N=0
20 INPUT "ENTER PROGRAM NUMBER ";N
30 LOAD P(N) 40 GOTO 10
```

I do hope that this letter results in a bit more refinement to a very good value Utility Disc. Do you have plans to publish anymore such discs? They would be very welcome.

Yours sincerely, J.C.Blomley.

DUAL CAT does work with Tasword 2, I've used it several times in the past. However it does need enough user memory to load data from one catalogue and exchange it with the other. If the basic on TW2 has been extended then there may not be quite enough room.

And yes we will do another Spectrum Utility disc, just as soon as we can get enough good material together. Ed.

Dear Editor,

Reference the letter from Christopher Box in the December issue of FORMAT. I think the book he was asking about is 'Easy Add-on Projects for Spectrum, ZX81 & ACE' by Owen Bishop and published by Bernard Sabani (publishing) Ltd, in 1983. The ISBN number is 0 85934 099 6. The Company is still publishing hobbyist books and their address is:- The Grampians, Shepherd's Bush Road, London, W6 7NF. A complete catalogue of their range of radio, electronics and computer books can be obtained free of charge, by sending a stamped addressed envelope to the above address.

Yours sincerely, Ray Bray.

Dear Editor,

In reference to the letter from Christopher Box on page 35 of the December 1992 issue of FORMAT, the information he requires is as follows; Book Title: Spectrum Interfacing and Projects. Author: Graham Bishop. Publisher: McGraw-Hill Book Company, Maidenhead, Berkshire. I.S.B.N.

0-07-084702-9. Also could you advise me where I can now obtain a second internal disc drive for my SAM Computer?

Yours sincerely, Dave Piper.

Just two of the many letters and telephone calls in reply to Chris's request for help on tracking down a book.

In reply to Dave's question. Drives are now available for SAM direct from West Coast, see their advert in this issue. Ed.

Dear Editor,

In the January '93 issue of FORMAT, you suggest that Bruce Everiss should cut down on the number of All Formats Shows. After looking at the list, I feel that the shows should be more widespread, visiting each venue less frequently, but they should be less frequent. (Only 2/3 a month).

The nearest venue to me is nearly 50 miles away, and I feel this is too far to make the visit worthwhile. Although I would like to visit the FORMAT stand, and various SAM stands. I would be grateful if you could pass this onto Bruce Everiss.

Also, does anybody know of a cheat for the SAM version of Manic Miner, or a cheat for the Spectrum Classic Jet Set Willy 2.

Whilst talking about "Miner Willy", star of these two games, do you know of a follow up to J.S.W.2 called "The Perils of Willy?" Does it exist?

Yours sincerely, James Marshall.

I agree that new venues need to be found but poor Bruce is only able to go on advice from local people. You just try finding a suitable venue miles from home in a strange town. Still 50 miles is no real distance. I've known many people to travel down to London or Birmingham all the way from Scotland.

Without doubt the Birmingham shows are the best with London following close behind. New ones at Hemel Hempstead and Brighton have been added this year and if people can suggest other locations then I'm sure they will be considered. Any other Miner

fans out there with an answer? Write in if you have. Ed.

Dear Editor,

A happy and prosperous New Year to all of you. I bought a 1 Megabyte external memory for SAM. For I thought I would make some more RAM discs so I could work more efficiently.

I have MasterDOS and MasterBasic but I don't know how to work with this extension. In the manual they wrote about port 128 and port 129 but what do you do with them. Do you know how to get ramdiscs in that device, or if you don't there must be someone else who knows more about it. Can you write something about it in FORMAT so I can use it instead of it just lying around somewhere.

Yours sincerely, S.M.S. Kempees.

The 1meg unit requires MasterDOS to use, which I see you already have - so I can't see why you are having problems. Just FORMAT a ramdisc as per the MasterDOS instruction manual, it will default to using the external memory if that is plugged in. Ed.

Dear Editor,

I am writing about the recent letter you sent about S&SC. When I was receiving the magazine, the design was the best point, but the photocopying wasn't too good. The main reason I stopped buying it was the fact it was so unreliable and I didn't receive issue 1 even though they took my money.

The reason that I don't subscribe to FORMAT and buy OUTLET now, is that I have an Amiga. So I sold my Spectrum gear (the pressure from the magazines saying that you've got to have the best computer i.e. the Amiga was so great especially in the now defunct New Computer Express).

But the sad fact is the machine is so expensive to run (so I cannot afford to run a Spectrum as I have laid out too much money and I am not giving up trying to program the bloody thing) the cost of games are £26 and over. I thought Spectrum games were dear at £10. So I can only buy a few a year. Magazines are £4. The official

programming books are 150. Davpac 3 assembler £70, so it's very expensive indeed.

I certainly enjoyed reading **FORMAT** in the 2 years I'd subscribed and I hope you keep the good work up for the thousands of enthusiasts that still read your good publication and the help you give Spectrum and SAM users who use your helpline each day. Sadly, I am not one of them any more.

All the best, Clifford Cooper.

Sad case, conned by the hype, bewitched by the flashy graphics, and then stuck with an expensive drain on his budget. Still at least he still has a computer - which is more than can be said for the morons who elect for **NinSega**. Ed.

Dear Editor,

Please find cheque for another years subscription to **FORMAT**.

You seem to be researching ways to make **FORMAT** even better. So let me explain why I look forward to reading it.

I am an O.A.P. therefore not a lot of spare cash. **FORMAT** keeps me up to date on what is happening in the SAM world. The adverts tell me what other people are working on. The letters pages assure me that I am not the only one with problems, sometimes your answers help me.

My own attempts at programming is very limited, keeping tabs on my bank accounts, making a weekly shopping list and another lets me know what the car costs to run, including the miles per gallon. All in basic, VERY VERY basic.

Perhaps there is one thing that might improve the **FORMAT** for me. Would it be possible to incorporate in the title of articles which system it is all about.

Keep up the good work.

Yours sincerely, C.F. Edwards.

Nearly all articles, particularly the Spectrum ones, are useful to both Spectrum and SAM owners. Some SAM articles would, I admit, require a little advanced knowledge to convert

direct but they often give ideas. I've been known to get ideas from a C64 magazine in the past.

However, there are some layout changes coming up at the start of the next volume so I will bear your suggestion in mind.

* * * * *

Letters may be shortened or edited to fit on these pages.

This is **YOUR** letters page so it is up to you, our readers, to fill it. Keep letters as short as you can so we can fit in as many as possible.

* * SMALL ADS * *

FOR SALE Spectrum +2 computer. Plus D disc drive and interface, Printer lead, Games and Utility programs including word-processor; database and Artist II, Books and manuals for all items, plus many more items. All in good working order. £110 ono. Phone Tony on 091 377 3227.

SAM Coupé 512k, 1 External Drive, Printer/Disc interface, Tape recorder, Joystick, software and complete set of **FORMAT**. £120. Phone Andy on (0389) 55322.

WANTED The Complete Spectrum ROM Disassembly and other Machine Code books. Old software such as Phipps Adventures (e.g. Knights Quest). Also The Hobbit, Fred etc. Tel Fraser on 0246 412547.

YOUR ADVERT

Selling, Buying, Pen Friends, etc. Any **PRIVATE** advert, up to 30 words (subject to acceptance), will be printed **FREE** in the next available issue. Any software sold must be original, in working order and with full instructions. The publishers will not be held, in any way, responsible for adverts in this column. Trade advertisers contact the publisher for rates.

PLEASE NOTE:- Due to limited space we can't guarantee your advert will appear in a particular issue.

SOFTWARE

SAM Coupé SOFTWARE - On 3½" Disc

SAM DEMO DISC #1 Utilities, demos, screens, a game, and lots more. A real bargain for any SAM owner.
Order Code SCD-02 Price £1.50

SAMCO NEWSDISC SET Issues 1 to 5 (six discs) packed with things no SAM owner should miss.
Order Code SCD-03 Price £12.00

SAMSPEC SOFTWARE

SAM + Spectrum software on one disc. (3½" or 5¼" - please state on order)

FONT LIBRARY #1. 100 screen fonts plus support software, easy to use on either computer. Special +3 disc available (Spectrum files only)
RRP £8.95
Order Code SSD-01 Price £6.95

MONEY MANAGER Advanced Personal Budgeting System for both machines. Spectrum version needs 128k/+2 (not +3/+2a). RRP £15.95
Order Code SSD-02 Price £12.95

DISCIPLE/PLUS D SOFTWARE

Please state 3½" or 5¼" disc

ARTIST 2 The best art package ever written for the Spectrum. 48K and 128K versions on the same disc with page maker and utility software. RRP £19.95
Order Code SPD-01 Price £16.95

UTILITY DISC #1. Six of the best and most useful disc utilities for **DISCIPLE** or **PLUS D**. Added bonus program - not to be missed. RRP £9.95
Order Code SPD-02 Price £6.95

HARDWARE

PRINTER LEAD Top quality parallel printer lead (BBC Standard). 2 meters long. For use with **DISCIPLE**, **PLUS D** or **SAM**. RRP £9.95
Order Code PPL-01 Price £7.95

SAM COUPÉ TECHNICAL MANUAL Version 3

The real inside info on SAM. As published by SAMCO. RRP £16.99
Order Code STM-01 Price £12.95

FORMAT

READERS SERVICES

HARDWARE

SPI. - SAM's Parallel Interface A full feature Parallel Printer Interface. Totally compatible with SAM's ROM and DOS printing routines and with utility programs like **FLASH** and **TASWORD 2**. Uses standard BBC lead (see above). RRP £24.95
Order Code SPI Price £19.95

SAM POWER SUPPLY Full spec, fully tested, with guarantee. RRP. £29.95
Order Code SPS Price £22.95

FORMAT BACK-ISSUES

Volumes 1, 2 and 3 of **FORMAT** now available only as complete volumes.
Order Code FBI-V1 (Vol.1) Price £10.00
Order Code FBI-V2 (Vol.2) Price £12.00
Order Code FBI-V3 (Vol.3) Price £12.00
All issues, from Volume 4 No 1 to the latest issue, are still available separately. To order quote the Volume/Issue No. Price £1.50 each, (5 or more £1.25 per copy)

FORMAT BINDERS

Hardcover binders to protect your valuable magazines. Each will hold 12 issues, easy to insert/remove.
Order Code FMB-01 Price £4.50

ORDERING

All prices include UK Postage and Packing. Overseas readers please add 10% to total order for extra postage. Please **WRITE YOUR ORDER ON A PIECE OF PLAIN PAPER**, and mark envelope **ORDER**.

Clearly state Order Code; Title; Quantity required; price & add any postage as above. Remember to quote your membership number or we can't send out your order. Payment in **STERLING** by Cheque (UK bank), P.O. Euro Cheques or Cash. Make cheques payable to **FORMAT**. **Payment MUST accompany order.** Please allow 28 days for dispatch. **FORMAT Publications** will not be held liable for delays or non-delivery due to circumstances beyond its control.